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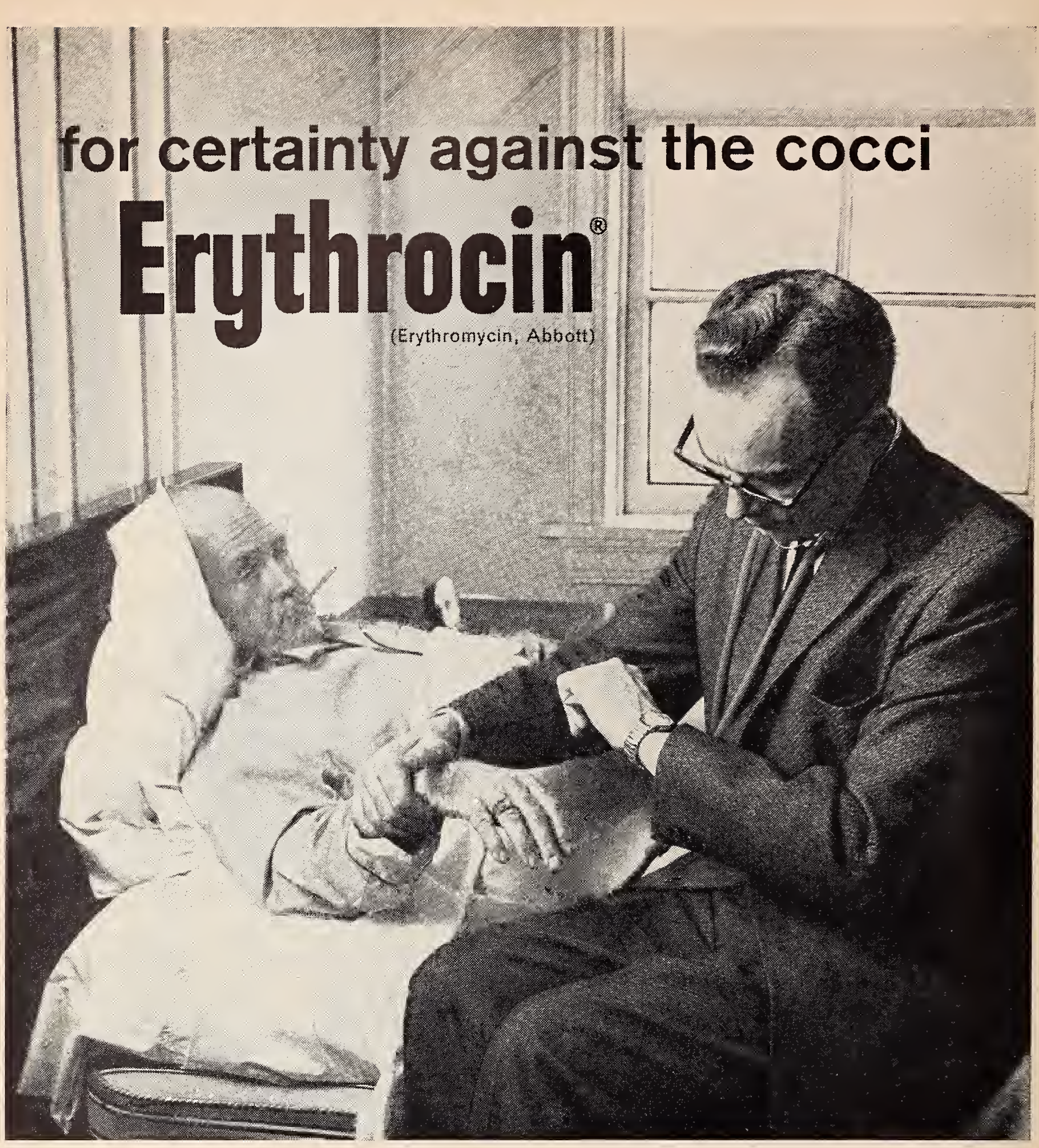

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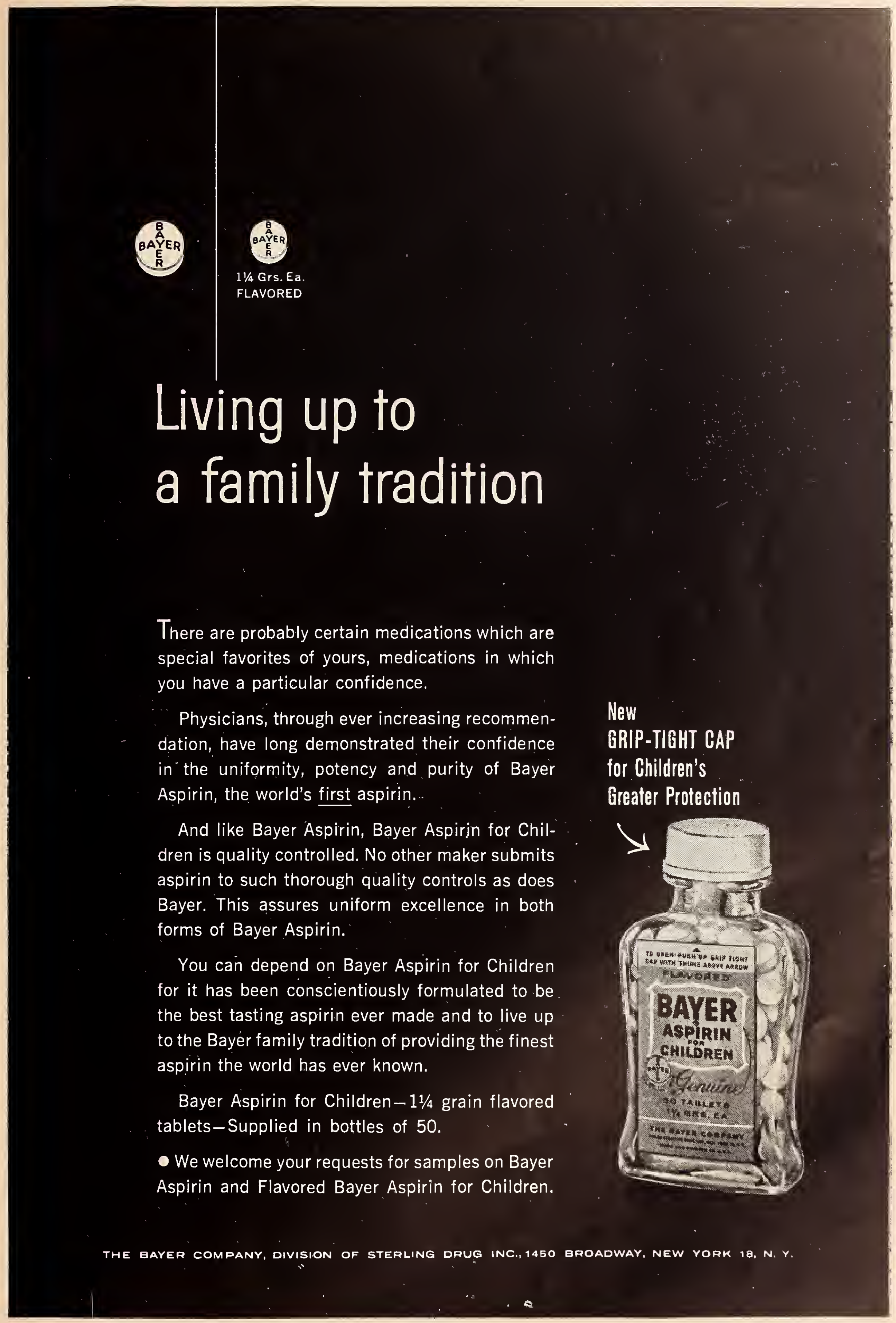

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Official Journal of the
Arizona Medical Association
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Vol. 17, No. 1
January, 1960

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Published monthly by the Arizona Medical Association, Inc. Business office at 1021 Central Towers Building, Phoenix, Arizona. Subscription $5 a year, single copy 50 cents. Entered as second class matter March 1, 1921, at Postoffice at Phoenix, Arizona, Act of March 3, 1879.

(The Editors of the Journal assume no responsibility for opinions expressed in the articles contributed by individual members.)

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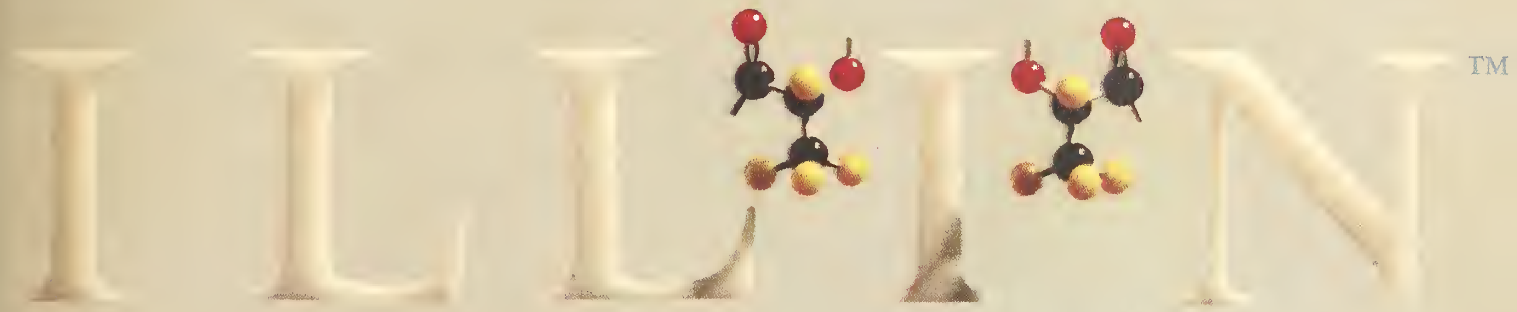

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ANTIBIOTIC ACTIVITY DIRECTLY PROPORTIONAL TO ORAL DOSE

REDUCED HAZARD OF SERIOUS ALLERGENICITY BY SAFER ORAL ROUTE

MANY STAPH STRAINS MORE SENSITIVE TO SYNCILLIN

BRISTOL

ORIGIN OF A NEW SYNTHETIC PENICILLIN

In March, 1957, Dr. John C. Sheehan of the Massachusetts Institute of Technology announced the total synthesis of penicillin from common raw materials, thus solving a problem which had baffled research workers for more than 15 years. Although total synthesis was not commercially practicable, this work, sponsored by Bristol Laboratories, made possible the subsequent synthesis of new penicillins not occurring in nature. Later scientists at Beecham Laboratories in England discovered that a key intermediate (6-aminopenicillanic acid) could be produced by a fermentation process. With these achievements, large scale production of synthetic penicillins became feasible.

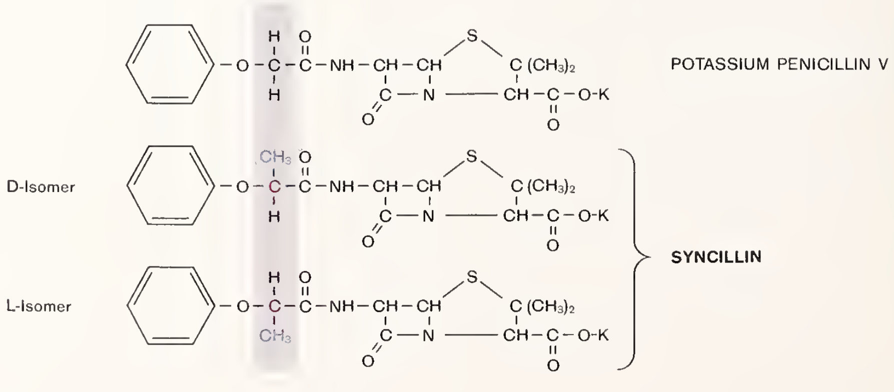
Organic chemists at Bristol then embarked upon an intensive program to develop better penicillins. Over five hundred were synthesized and underwent preliminary screening. Forty-six showed sufficient promise to warrant further investigation. Extensive microbiological, pharmacological, and clinical screening indicated that one compound, SYNCILLIN, had advantages of major importance over other penicillins.

SYNCILLIN is the N-acylation product of 6-aminopenicillanic acid and α-phenoxypropionic acid (the phenylether of lactic acid). It is freely soluble in water and remarkably resistant to decomposition by acid. The acid stability of SYNCILLIN is equivalent to that of penicillin V at pH 2 and pH 3 at 37° C.[1]

SIGNIFICANCE OF MOLECULAR ASYMMETRY AND ISOMERIC COMPLEMENTARITY

SYNCILLIN has a molecular configuration similar to penicillin V, but contains an additional CH_3 group so positioned as to render the adjacent carbon atom asymmetric. (In the formulae below, the added CH_3 group is shown in blue and the asymmetric carbon atom in red.) As a result, SYNCILLIN occurs as a mixture of two isomers.

Each isomer has been synthesized in essentially pure form and found to possess distinctive chemical and biological properties. The L-isomer is 2 to 17 times more active than the D-isomer against many of the organisms tested. As produced, SYNCILLIN is a mixture of the L-isomer and the D-isomer. As will be shown later, the antibiotic effect of the clinically available mixture, SYNCILLIN, is greater than either isomer alone against many organisms. This phenomenon is referred to here as *isomeric complementarity*.



ISOMERIC COMPLEMENTARITY DEMONSTRATED IN VITRO

The *in vitro* minimum inhibitory concentration (MIC) of SYNCILLIN and of each of its two component isomers was determined for a variety of common pathogens and laboratory test organisms. As may be seen from Table 1, all three are highly effective against penicillin-susceptible staphylococci and against pneumococci, streptococci, gonococci, and corynebacteria; all are ineffective against Salmonella, *E. coli,* and other gram-negative coliform bacilli.

SYNCILLIN was more active against many of the test strains including some streptococci and staphylococci than either of its components. This demonstrates *in vitro* the phenomenon of isomeric complementarity.

TABLE 1

Minimum Concentrations of SYNCILLIN and Components Required to Inhibit a Wide Range of Bacteria

Minimum Inhibitory Concentration (MIC) in Micrograms per Milliliter

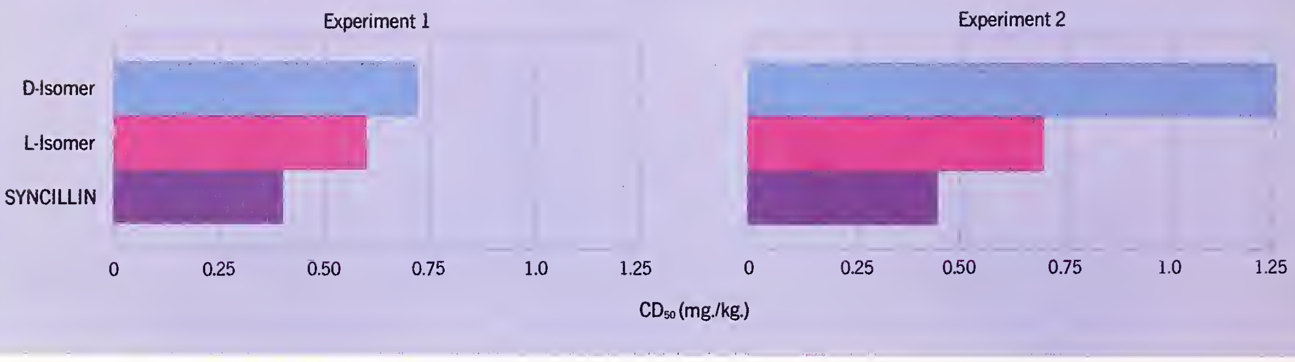
	L-Isomer	D-Isomer	SYNCILLIN
Bacillus anthracis	0.06	0.25	0.03
Bacillus cereus	12.5	100	25
Bacillus circulans ATCC 9961	6.25	6.25	6.25
Corynebacterium xerosis	0.06	0.125	0.03
*Diplococcus pneumoniae	0.06	0.06	0.06
Escherichia coli ATCC 8739	>100	>100	>100
Gaffkya tetragena	0.015	0.03	0.015
Micrococcus flavus	0.015	0.125	0.015
Salmonella paratyphi A	25	50	25
Salmonella typhosa	>100	>100	>100
Sarcina lutea ATCC 10054	0.007	0.12	0.007
Shigella sonnei	100	100	100
Staphylococcus aureus 209P	0.06	0.125	0.03
Staphylococcus aureus var. Smith	0.03	0.125	0.03
Streptococcus agalactiae ATCC 1077	0.03	0.06	0.03
Streptococcus dysgalactiae ATCC 9926	0.03	0.06	0.03
Streptococcus faecalis PCI 1305	6.25	25	6.25
*Streptococcus pyogenes 203	0.06	0.06	0.06
*Streptococcus pyogenes Digonnet	0.03	0.15	0.06
Streptococcus pyogenes 2320	0.06	0.06	0.03
Streptococcus pyogenes 23586	0.06	0.06	0.06
Vibrio comma	50	25	25

Serial dilution technique in heart infusion broth *10% serum added

ISOMERIC COMPLEMENTARITY CONFIRMED *IN VIVO*

To determine the median curative dose (CD_{50}) mice were infected with 100 times the lethal dose of *Staphylococcus aureus*. Each penicillin being tested was administered intramuscularly at the same time, and the dose required to cure half the animals determined. The greater effect of the mixture of the two isomers (SYNCILLIN) is shown in two independent experiments. (See Figure 1.) Note that isomeric complementarity is thus confirmed *in vivo*.

FIGURE 1 — Median Curative Dose (CD_{50}) for *Staphylococcus aureus* (var. Smith) Infections

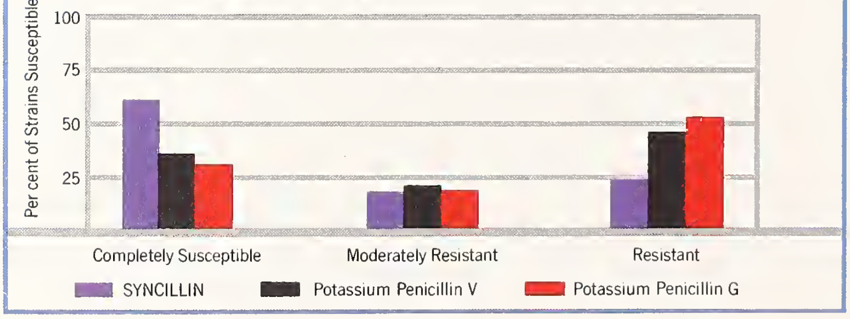


MANY STRAINS OF STAPHYLOCOCCI MORE SENSITIVE TO SYNCILLIN

SYNCILLIN has been tested against a large number of strains of *Staphylococcus aureus* isolated from clinical sources. Many organisms resistant to potassium penicillin G and potassium penicillin V proved sensitive to SYNCILLIN.

Wright[2] performed sensitivity studies on 54 strains, the majority of which were resistant or moderately resistant to penicillin V and penicillin G. Thirty-two (60%) of the strains were sensitive to SYNCILLIN, approximately twice as many as with the other penicillins. (See Figure 2.) In two-thirds of the isolates, SYNCILLIN produced inhibition at concentrations lower than those required for either of the other antibiotics. One strain was more sensitive to penicillin G.

FIGURE 2 – *In Vitro* Sensitivity of 54 Strains of Coagulase-Positive *Staphylococcus aureus* from Clinical Sources



Adapted from Wright[2]

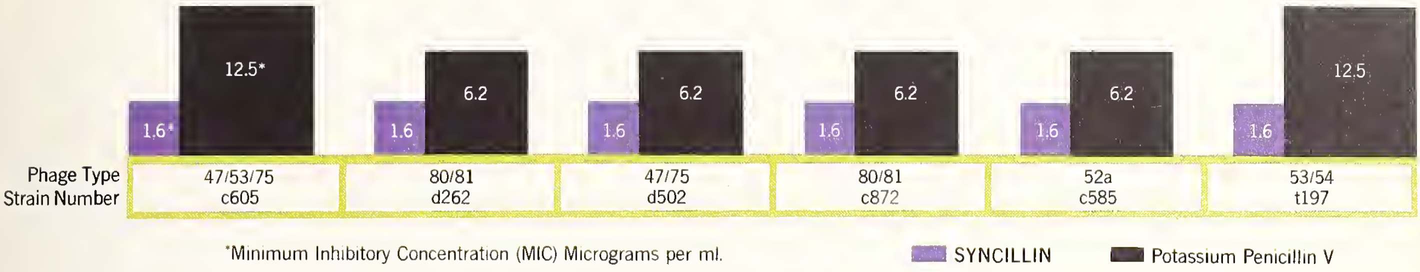
SYNCILLIN

major therapeutic advantages accompany molecular asymmetry

Of equal interest are the findings of White.[3] Six penicillin-resistant strains of staphylococci were isolated from hospital infections. None was sensitive to potassium penicillin V. All were sensitive to SYNCILLIN. (See Figure 3.)

FIGURE 3

Minimum Concentrations of SYNCILLIN Required to Inhibit Hospital Strains of *Staphylococcus aureus* Resistant to Potassium Penicillin V



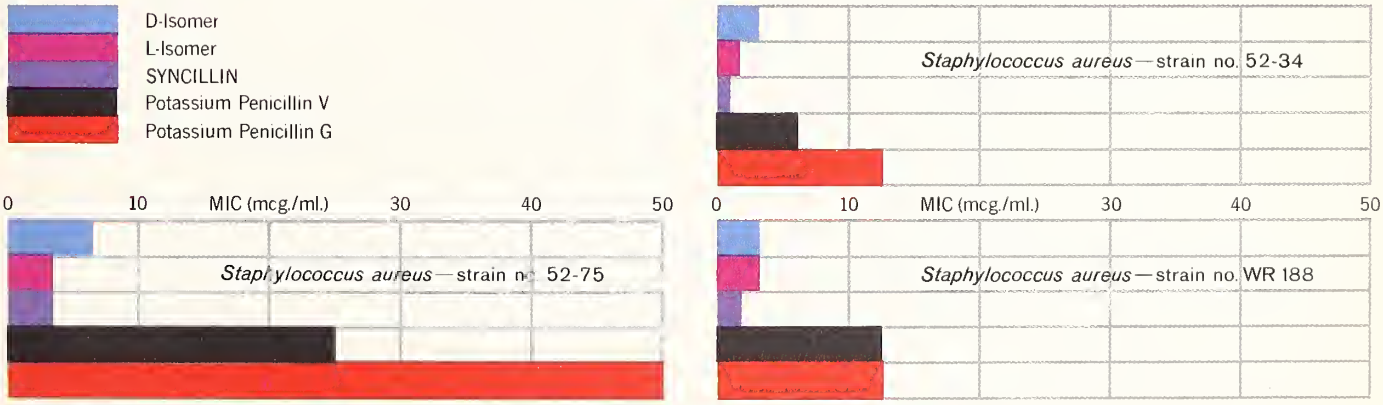
*Minimum Inhibitory Concentration (MIC) Micrograms per ml.

The efficacy of SYNCILLIN against the type 80/81 Staphylococcus (dangerous and widespread in hospitals) is worthy of special attention.

The complementary action of the component isomers is also seen with strains of staphylococci resistant to penicillins. Note that SYNCILLIN is more effective than either isomer against strains 52-34 and WR 188. (See Figure 4.) Against all three strains, SYNCILLIN is effective at concentrations below serum levels, while penicillins V and G are ineffective.

FIGURE 4

Minimum Inhibitory Concentrations (MIC) for Coagulase-Positive Penicillin-Resistant Strains of *Staphylococcus aureus*



Isomeric complementarity has thus been demonstrated for:

— *certain penicillin-susceptible streptococci, staphylococci and corynebacteria* in vitro *(Table 1)*

— *penicillin-susceptible staphylococci* in vivo *(Figure 1)*

— *penicillin-resistant staphylococci* in vitro *(Figure 4)*

SYNCILLIN

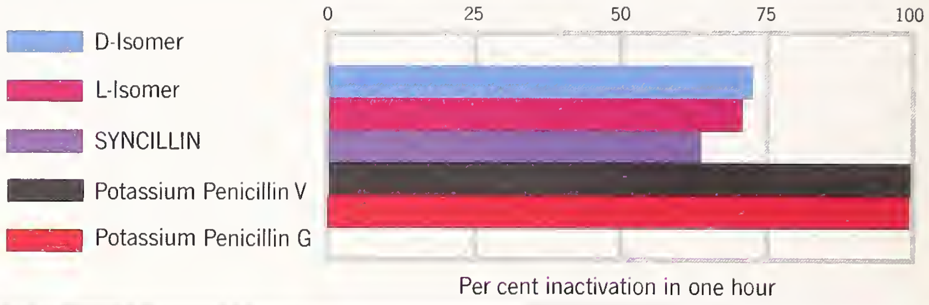
major therapeutic advantages accompany molecular asymmetry

ISOMERIC COMPLEMENTARITY SHOWN BY REDUCED RATE OF INACTIVATION BY PENICILLINASE

Bacterial resistance to penicillin has been attributed to the action of penicillin-inactivating enzymes produced by the invading organisms.[4] As shown in Figure 5, SYNCILLIN is less affected by staphylococcal penicillinase than either of its component isomers — a further demonstration of isomeric complementarity. Further, SYNCILLIN is shown to be less inactivated by this enzyme than penicillin V and penicillin G.

Resistance to SYNCILLIN develops in a slow, step-wise manner characteristic of other penicillins, in contrast to the usually rapid development of resistance to streptomycin.

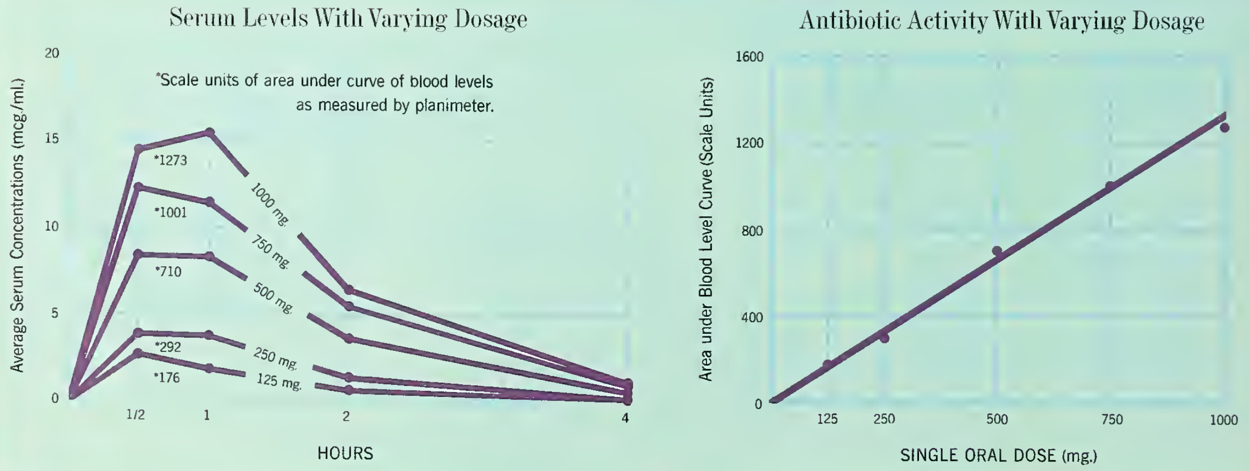
FIGURE 5—Effect of Staphylococcal Penicillinase on Different Penicillins



ANTIBIOTIC ACTIVITY DIRECTLY PROPORTIONAL TO ORAL DOSAGE

Cronk[5] studied blood levels after administering varying amounts of SYNCILLIN. (Figure 6.) Total antibiotic activity (obtained by measuring areas under curves with a planimeter) increases rapidly as the dose is doubled. These data show that increased dosage markedly increases serum concentration and thus may enhance the drug's effectiveness.

FIGURE 6


Serum Levels With Varying Dosage

Antibiotic Activity With Varying Dosage

SYNCILLIN

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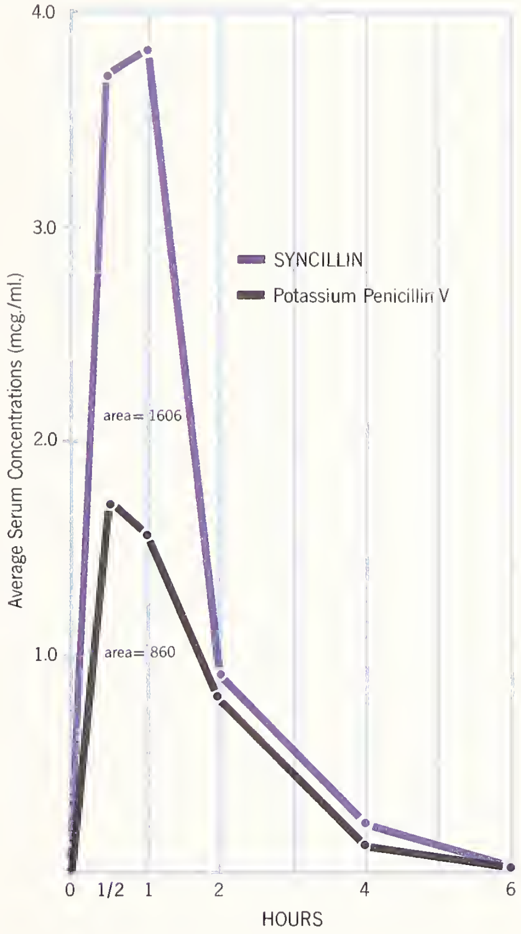
BLOOD LEVELS TWICE AS HIGH AS WITH POTASSIUM PENICILLIN V AFTER ORAL ADMINISTRATION

Wright[6] performed comparative crossover blood level studies on volunteer subjects receiving equivalent amounts of potassium penicillin V and SYNCILLIN. The peak concentrations attained during the first hour after administration were twice as high with SYNCILLIN.

The total antibiotic activity as measured by the area under the curves (see Figure 7) indicates an almost 2 to 1 superiority of SYNCILLIN (1606) over potassium penicillin V (860).

The higher blood levels may be of value with organisms of only moderate penicillin-sensitivity where doubling the blood concentration may be essential for effective bactericidal action. In addition these higher levels may be necessary where there is infection in areas with a poor blood supply.[7] Under these circumstances a higher blood concentration may provide the increased diffusion pressure required to deliver adequate amounts to the tissue.

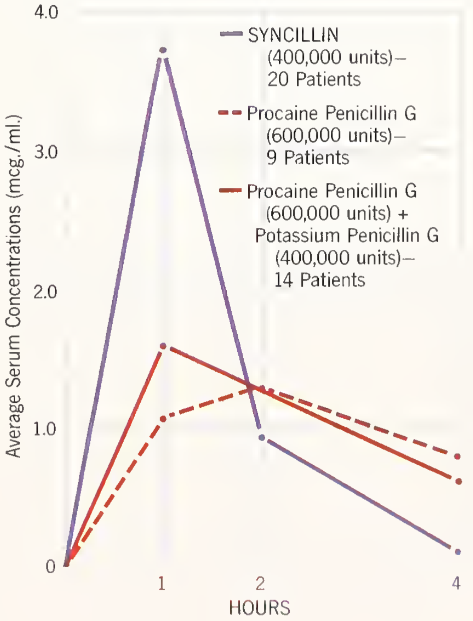
FIGURE 7
20 Subject Crossover
250 mg. Single Dose



BLOOD LEVELS MUCH HIGHER THAN WITH INTRAMUSCULAR PENICILLIN G

In addition, blood levels attained with oral SYNCILLIN[6] are much higher than those with intramuscular penicillin G.[8a, b] (See Figure 8.) Note that the level at one hour for SYNCILLIN (3.8 mcg./ml.) is more than twice as high as with procaine penicillin G, even when reinforced with potassium penicillin G (1.6 mcg./ml.). Since penicillins are *bactericidal,* these intermittent high serum levels can be clinically significant. Thus, SYNCILLIN offers the promise of superior efficacy via the safer oral route.

FIGURE 8—Serum Levels after Oral Administration of SYNCILLIN (250 mg.) and after Intramuscular Injection of Penicillin G



REDUCED HAZARD OF SERIOUS ALLERGENICITY BY SAFER ORAL ROUTE

SYNCILLIN has been administered in multiple doses to 437 patients and volunteers. One patient developed itching during therapy, possibly an allergic side effect. Another had a purpuric rash, but no relationship to SYNCILLIN was established. No reactions were observed in 9 patients with a known history of sensitivity to penicillin.

While the above data suggests the possibility of reduced allergenic hazard, no definite conclusions may be drawn at this time. *The usual precautions for oral penicillin therapy should be observed.* Patients with histories of asthma, hay fever, urticaria, or previous penicillin-sensitivity should especially be watched carefully. Since SYNCILLIN is administered orally, it may be expected to be safer than parenteral penicillin.

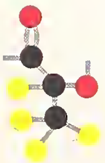
As Flippin[9] recently stated, "... it is well established that serious allergy to the drug [penicillin] is most likely to occur following parenteral administration, especially after repeated intramuscular injections; the oral route is least likely to initiate severe hypersensitivity reactions. This can be explained partly by the fact that when reactions develop following oral medication, they are usually slow enough to treat symptomatically; thus the progression of the reaction can usually be interrupted.... In view of the relatively high incidence of severe allergy to injectable penicillin, it would seem advisable to employ oral penicillin routinely, except in the control of infections involving the blood stream, endocardium, meninges, etc., in which cases the parenteral route remains the preferred treatment."

SYNCILLIN, like other penicillins, is essentially free of other toxicity. No hematopoietic, hepatic, or renal toxicity was observed in 210 volunteers receiving 1 gm. daily for 2 to 3 weeks.[10]

CLINICAL EFFICACY DEMONSTRATED IN PENICILLIN-SENSITIVE INFECTIONS

Clinical trials conducted by Blau and Kanof,[11] White,[12] Prigot,[13] Robinson,[14] Dube,[15] Ferguson,[16] Rutenburg,[17] Richardson,[18] Bunn,[19] Cronk,[5] Kligman,[10] and Yow [20] demonstrated the efficacy of SYNCILLIN in a variety of streptococcal, staphylococcal, pneumococcal, and gonococcal infections. Conditions treated included respiratory, skin, soft tissue, wound, and chronic urinary tract infections; acute gonorrhea; cellulitis; septicemia; otitis media; gingivitis; and Vincent's angina. In a few patients SYNCILLIN was used for rheumatic fever or gonorrheal prophylaxis.

One hundred seventy-two of one hundred ninety-six patients responded favorably to SYNCILLIN. The failures included 1 patient with pustular dermatoses, 10 elderly patients with chronic urinary tract infections, 1 patient with gonorrhea, 1 patient with a gram-negative infection, and 10 patients with staphylococcal infections. Lack of response of staphylococcal infections was attributed to the presence of resistant organisms or local suppurative foci requiring drainage.



Relatively few side effects were encountered. One patient experienced moderate itching of the skin which was controlled by an antihistamine. Another reported pruritus ani which did not interfere with therapy. Diarrhea occurred in 4 instances. There was one purpuric rash, but no relationship to SYNCILLIN could be established.

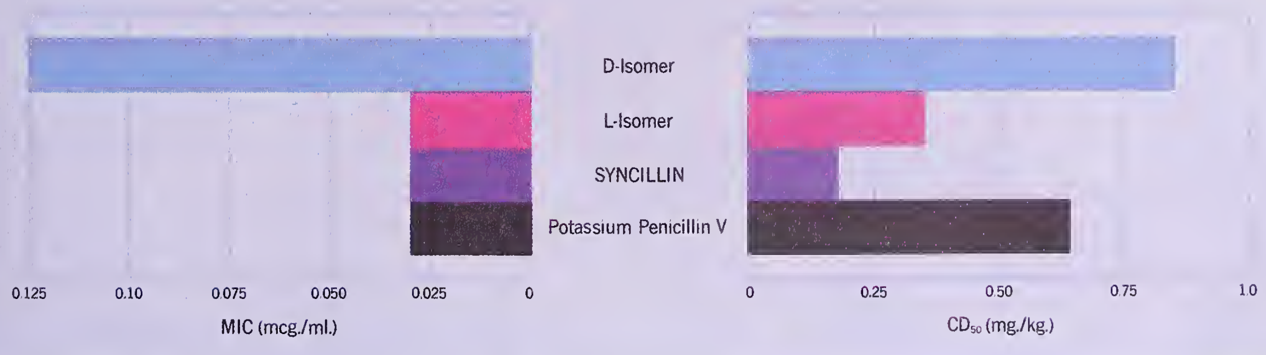
Clinical response usually begins within 24 hours in infections susceptible to SYNCILLIN. Recovery occurs in 4 to 7 days depending upon the severity of the infection. Gonorrheal infections respond very promptly to SYNCILLIN; 500 mg. b.i.d. for two days usually produce bacteriologic cures.

IMPROVED ANTIBIOTIC EFFECT FROM COMPLEMENTARY ACTION OF ISOMERS

SYNCILLIN is a mixture of isomers. The L-isomer is 2 to 17 times more active than the D-isomer against many of the organisms tested. Furthermore, the D- and L-isomers have other distinguishing chemical, pharmacological, and microbiological properties. Their *in vivo* and *in vitro* activities differ for many important pathogens. *Against many of the organisms tested, the combination of isomers* (SYNCILLIN) *is much more active than the stronger isomer alone.* This phenomenon of isomeric complementarity is not always demonstrable, for in a few instances SYNCILLIN is slightly less active.

Isomeric complementarity has previously been demonstrated *in vitro* (Figure 4) and *in vivo* (Figure 1). Figure 9 reveals a third form of superiority related to isomeric complementarity. Equal concentrations of SYNCILLIN and penicillin V were required to inhibit this growth of staphylococci *in vitro*. But, *in vivo*, a much smaller amount of SYNCILLIN *(one-third that of penicillin V)* was effective in an experimental infection with the same strain. These observations on complementary action indicated the advantage of producing the mixture of isomers as the medication to be made available for clinical therapy.

FIGURE 9 — Comparison of CD_{50} and MIC Values Against *Staphylococcus aureus* (var. Smith)



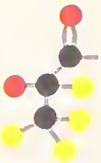
Isomeric complementarity has thus been demonstrated for:

— *certain penicillin-susceptible streptococci, staphylococci and corynebacteria* in vitro *(Table 1)*

— *penicillin-susceptible staphylococci* in vivo *(Figures 1 and 9)*

— *penicillin-resistant staphylococci* in vitro *(Figure 4)*

— *staphylococcal penicillinase antibiotic inactivation (Figure 5)*



SYNCILLIN

major therapeutic advantages accompany molecular asymmetry

Indications:

SYNCILLIN is recommended in the treatment of infections caused by pneumococci, streptococci, gonococci, corynebacteria, and penicillin-sensitive staphylococci. In addition, SYNCILLIN is effective against certain strains of staphylococci resistant to other penicillins.

SYNCILLIN, like other oral penicillins, is not recommended at the present time in deep-seated or chronic infections, subacute bacterial endocarditis, meningitis, or syphilis.

Dosage:

125 mg. or 250 mg. three times daily, depending on the severity of infection. Larger doses (e.g., 500 mg. t.i.d.) may be used for more severe infections. SYNCILLIN may be administered without regard to meals.

Beta hemolytic streptococcal infections should be treated with SYNCILLIN for at least ten days.

Precautions:

While present data suggest the possibility of reduced allergenic hazard, no definite conclusions may be drawn at this time. *Therefore the usual precautions with oral penicillin therapy must be observed.* Patients with histories of asthma, hay fever, urticaria, or previous reactions to penicillin should be watched with special care.

Diarrhea has been reported occasionally following heavy dosage. If this occurs, the interval between dosages should be lengthened.

If superinfection occurs during therapy, appropriate measures should be taken.

Since some strains of staphylococci are resistant to SYNCILLIN as well as to other penicillins, cultures and sensitivity tests should be performed where indicated by clinical judgment. As is true with all antibiotics, clinical response does not always correlate with laboratory bacterial sensitivity reports.

Supply:

125 and 250 mg. tablets, bottles of 25 and 100. 125 mg. powder for oral solution, 60 ml. vials.

References: 1. Lein, J.: Microbiology report to Bristol Laboratories Inc. 2. Wright, W. W.: Microbiology report to Bristol Laboratories Inc. 3. White, A. C.: Microbiology report to Bristol Laboratories Inc. 4. Dubos, R. J.: Bacterial and Mycotic Infections of Man, 3rd edition, Philadelphia, J. B. Lippincott Co., p. 690. 5. Cronk, G. A.: Clinical report to Bristol Laboratories Inc. 6. Wright, W. W.: Clinical report to Bristol Laboratories Inc. 7. Kass, E. H.: Am. J. Med. *18*:764 (May) 1955. 8a. White, A. C.; Couch, R. A.; Foster, F.; Calloway, J.; Hunter, W., and Knight, V.: in Welch, H. and Marti-Ibañez, F.: Antibiotics Annual — 1955-1956, Medical Encyclopedia, Inc., New York, 1956, p. 490. b. Data on file — at Bristol Laboratories. 9. Flippin, H. F.: Pennsylvania M. J. *62*:864 (June) 1959. 10. Kligman, A.: Clinical report to Bristol Laboratories Inc. 11. Blau, S., and Kanof, N.: Clinical report to Bristol Laboratories Inc. 12. White, A. C.: Clinical report to Bristol Laboratories Inc. 13. Prigot, A.: Clinical report to Bristol Laboratories Inc. 14. Robinson, C.: Clinical report to Bristol Laboratories Inc. 15. Dube, A. H.: Clinical report to Bristol Laboratories Inc. 16. Ferguson, B.: Clinical report to Bristol Laboratories Inc. 17. Rutenburg, A. M.: Clinical report to Bristol Laboratories Inc. 18. Richardson, J. H.: Clinical report to Bristol Laboratories Inc. 19. Bunn, P. A.: Clinical report to Bristol Laboratories Inc. 20. Yow, E. M.: Clinical report to Bristol Laboratories Inc.

BRISTOL

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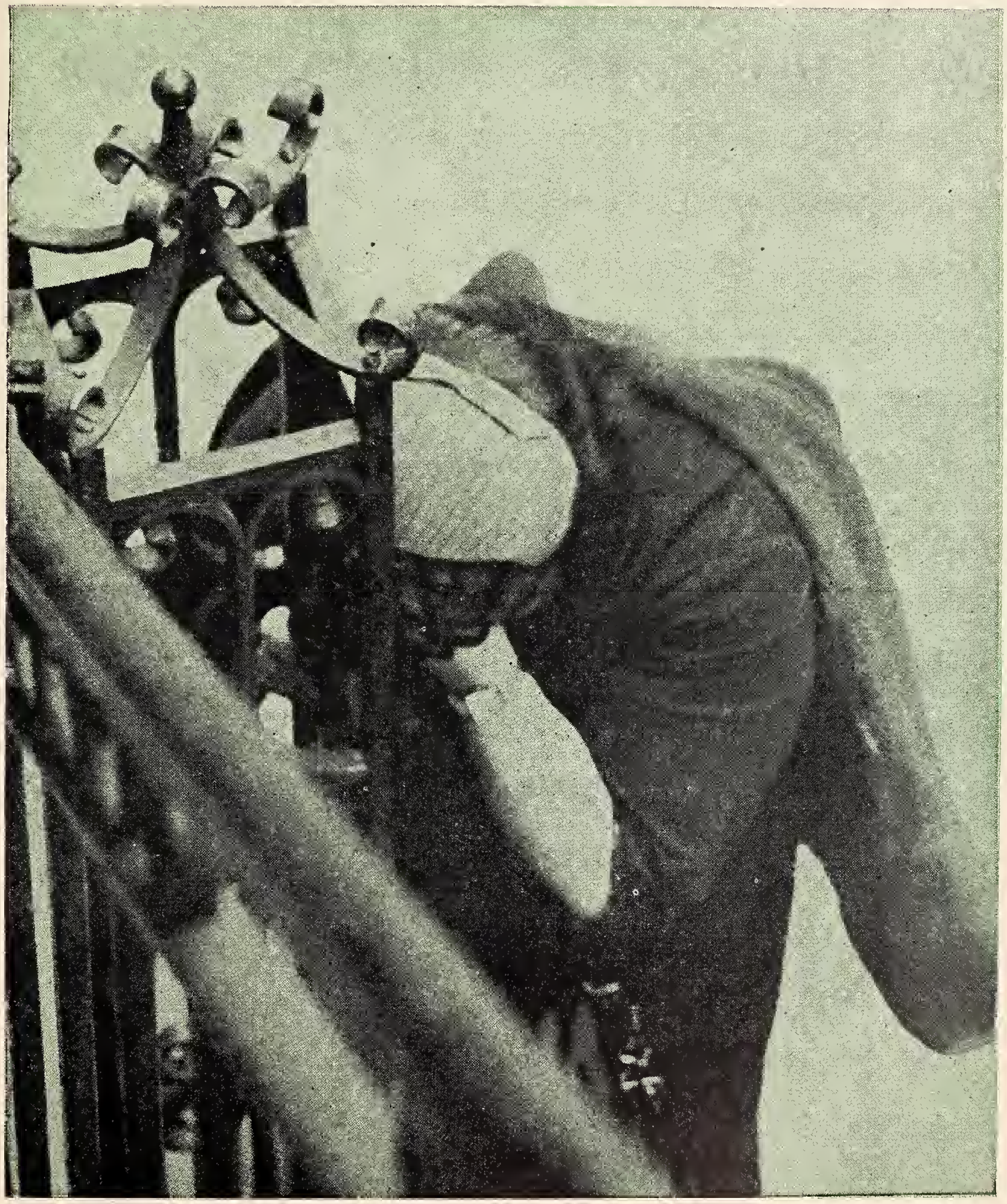
WHEN BLOOD PRESSURE MUST COME DOWN...



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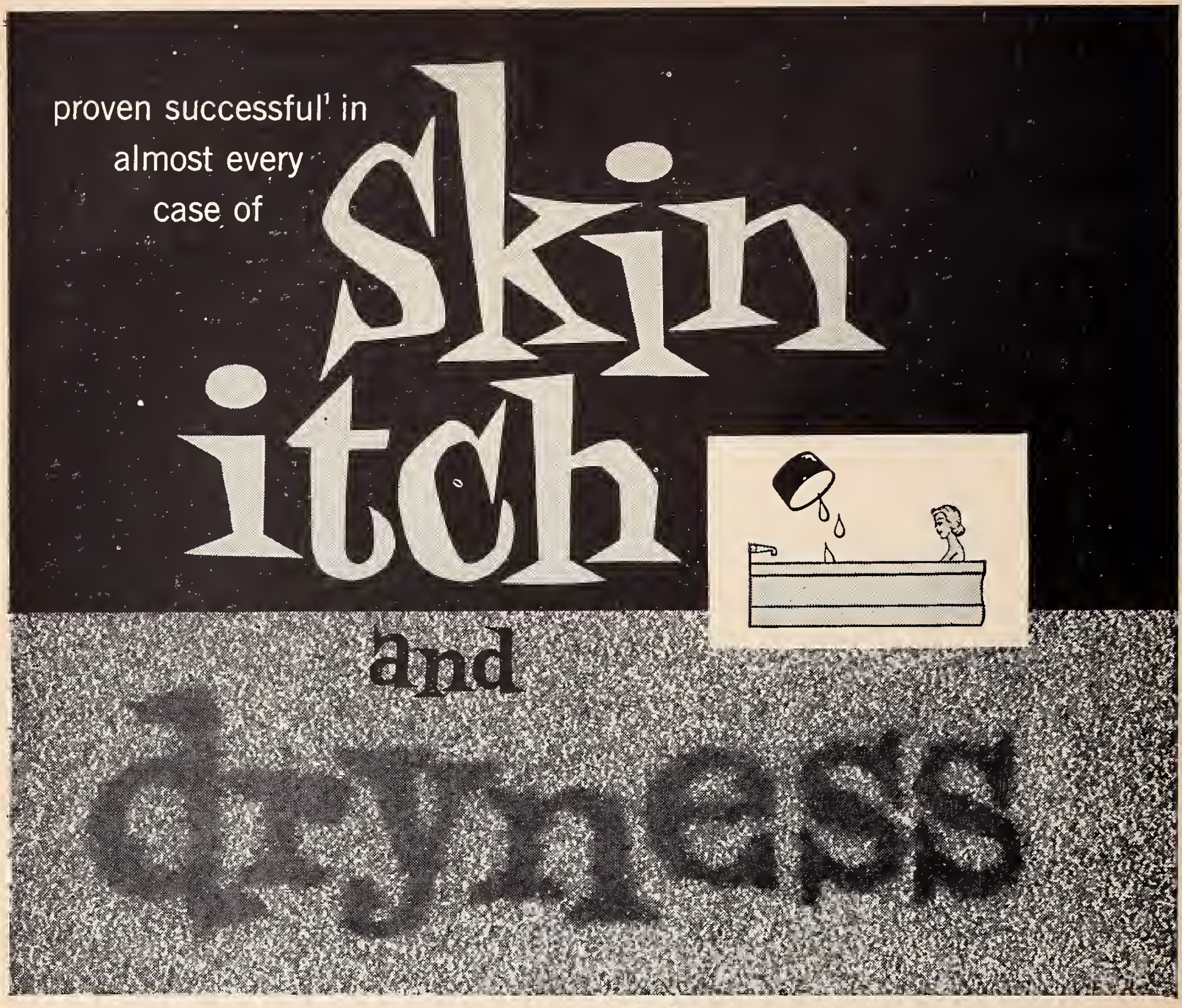

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[1] *Spoor, H. J.: N. Y. State J. Med. Oct. 15, 1958*

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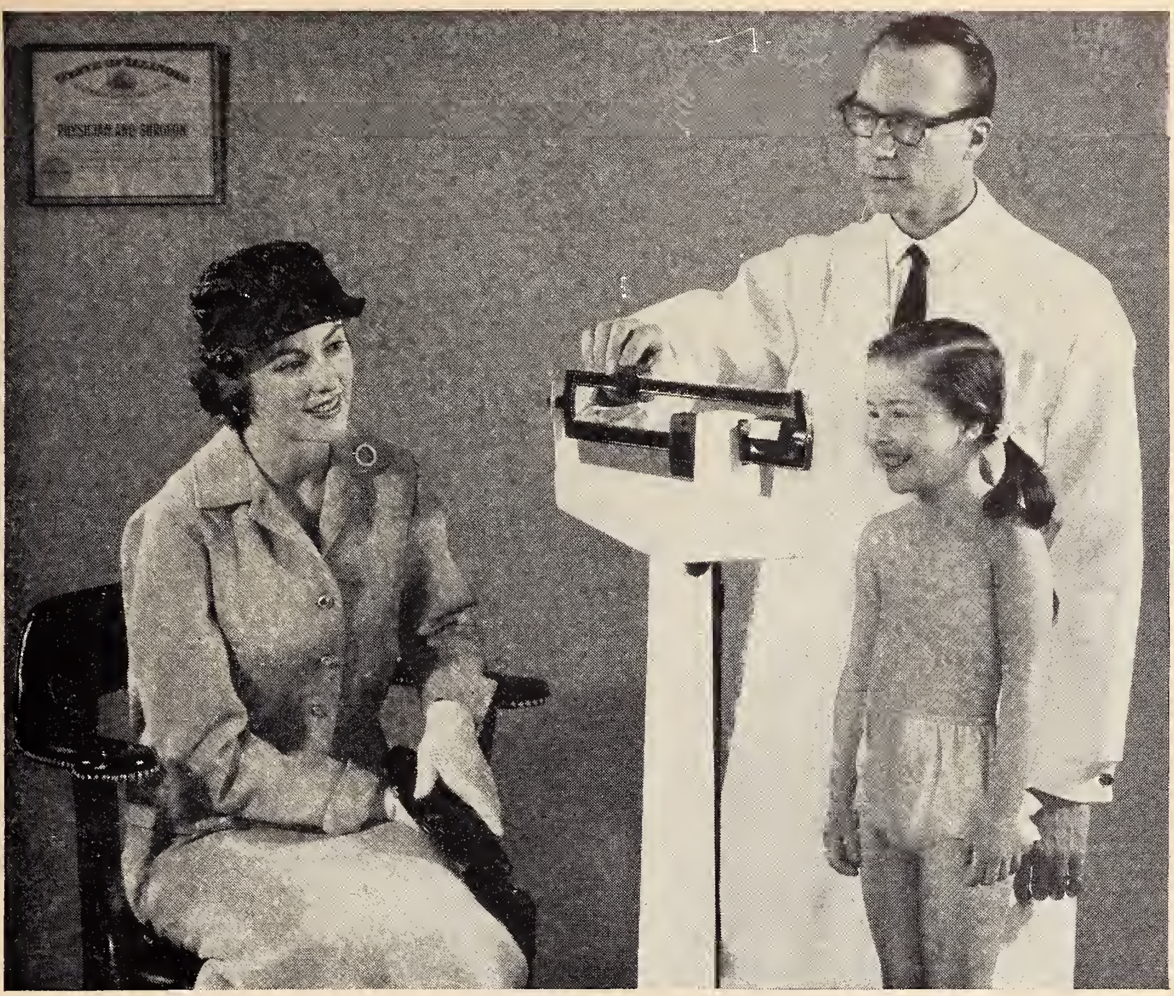

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Anorexia and "Weight Lag" Study—Brown, Libo and Nussbaum have reported* consistent and definite increases in rate of weight gain in eighty-six patients, ranging in age from 7 weeks to 15½ years. This beneficial action of Nilevar was observed in the patients with organic and traumatic disorders as well as those whose only complaints were poor appetite and/or persistent failure to gain weight.

In this study, the weight gained was not lost after discontinuance of Nilevar therapy although many patients did not continue the sharp gains effected by the drug.

The authors are of the opinion that Nilevar is a highly useful anabolic agent for influencing weight gain in underweight children.

When Nilevar is administered to children a dose of 0.25 mg. per pound of body weight is recommended and continuous dosage for more than three months is not recommended.

Nilevar is supplied as tablets of 10 mg., drops of 0.25 mg. per drop and ampuls of 25 mg. in 1 cc. of sesame oil. Further dosage information in Searle Reference Manual No. 4.

G. D. Searle & Co., Chicago 80, Illinois. Research in the Service of Medicine.

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*Brown, S. S.; Libo, H. W., and Nussbaum, A. H.: Norethandrolone in the Successful Management of Anorexia and "Weight Lag" in Children, Scientific Exhibit presented at the Annual Meeting of the American Academy of Pediatrics, Chicago, Oct. 20-23, 1958.

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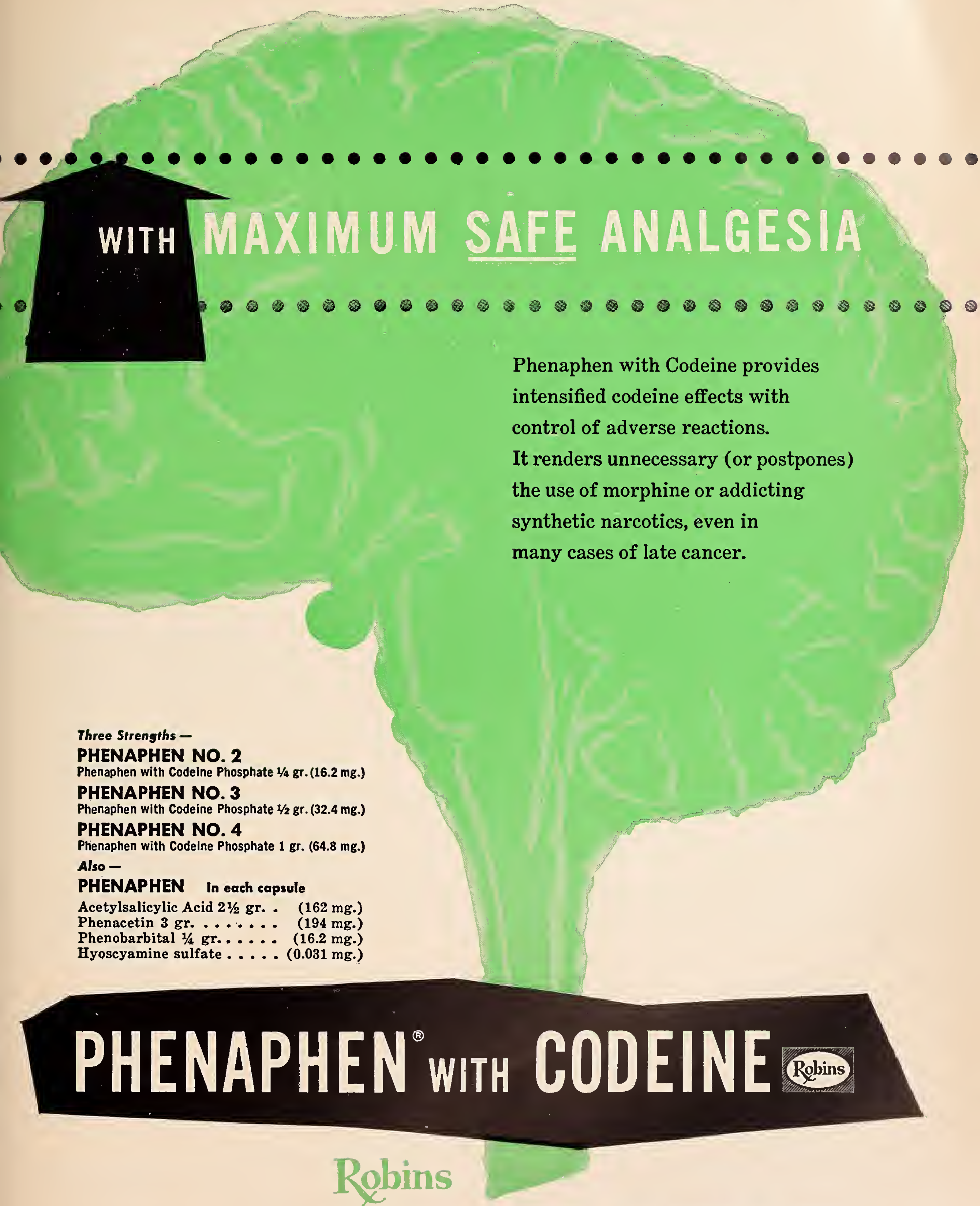

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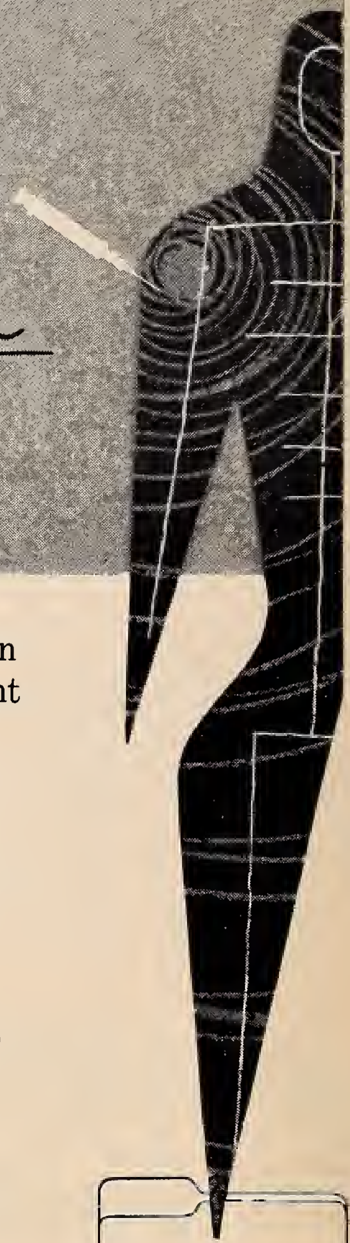

The Depinar special repository base permits slow absorption from the injection site, thus decreasing the need for frequent administration. Depinar continually bathes the tissues in vitamin B_{12} to provide more effective therapy and make patients feel better longer. A recent clinical report* shows over 98% of Depinar is retained after one week . . . and "Serum level vitamin B_{12} . . . sustained for 28 days or more from the single dose."

Each package of Depinar consists of a multiple dose vial, containing cyanocobalamin zinc tannate (lyophilized) equivalent to 2500 mcg. vitamin B_{12}. The vial of diluent contains 5 cc. Sodium Chloride Solution for Injection. When reconstituted, each ml. of Depinar contains 500 mcg. vitamin B_{12}.

*Thompson, R. E., and Hecht, R. A.: Am. J. Clin. Nutrition 7:311-317 (May-June) 1959.

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THE doctor's room in the hospital is used for a variety of reasons. Most any morning, you will find the internist talking with the surgeon, the resident discussing a case with the gynecologist, or the pediatrician in for a cigarette. It's sort of a club, this room, and it's a good place to get the low-down on "Premarin" therapy.

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Caffeine	gr. ½
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Acetylsalicylic Acid	gr. 3½
Caffeine	gr. ½
Codeine Phosphate	gr. ½

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...providing the desired gradation of potencies for relief of varying intensities of pain

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rheumatic conditions
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of all degrees of
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that which
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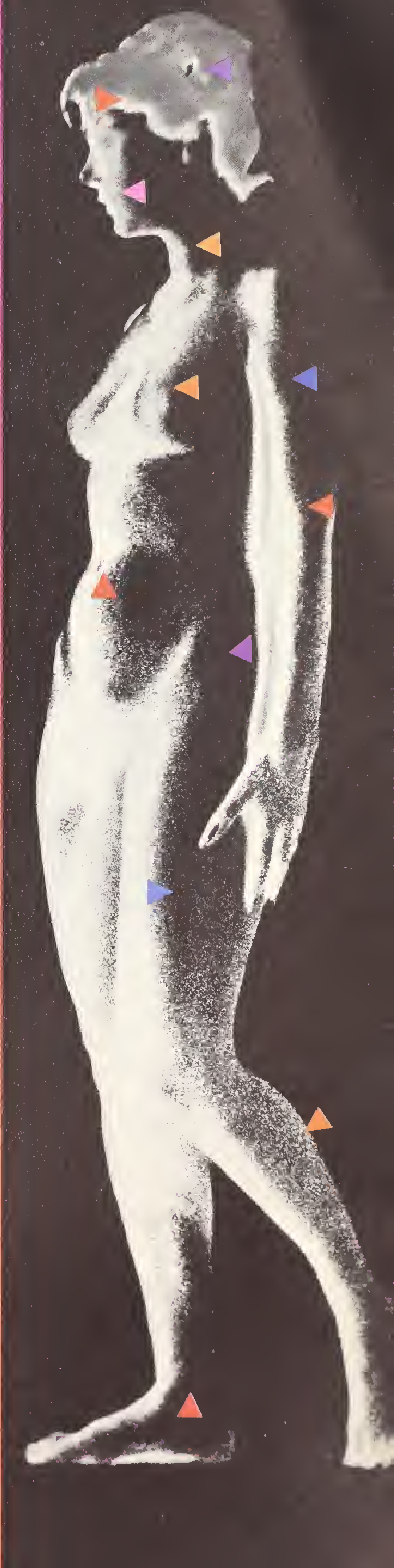

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1. Lippmann, O.: Arch. Ophth. 57:339, March 1957.
2. Gordon, D.M.: Am. J. Ophth. 46:740, November 1958.

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. . . into a mixed culture of the four organisms commonly involved in sinusitis . . . *Str. hemolyticus, D. pneumoniae, H. influenzae* and *Staph. aureus* (in this case a resistant strain) . . . we introduce the five most frequently used antibiotics.

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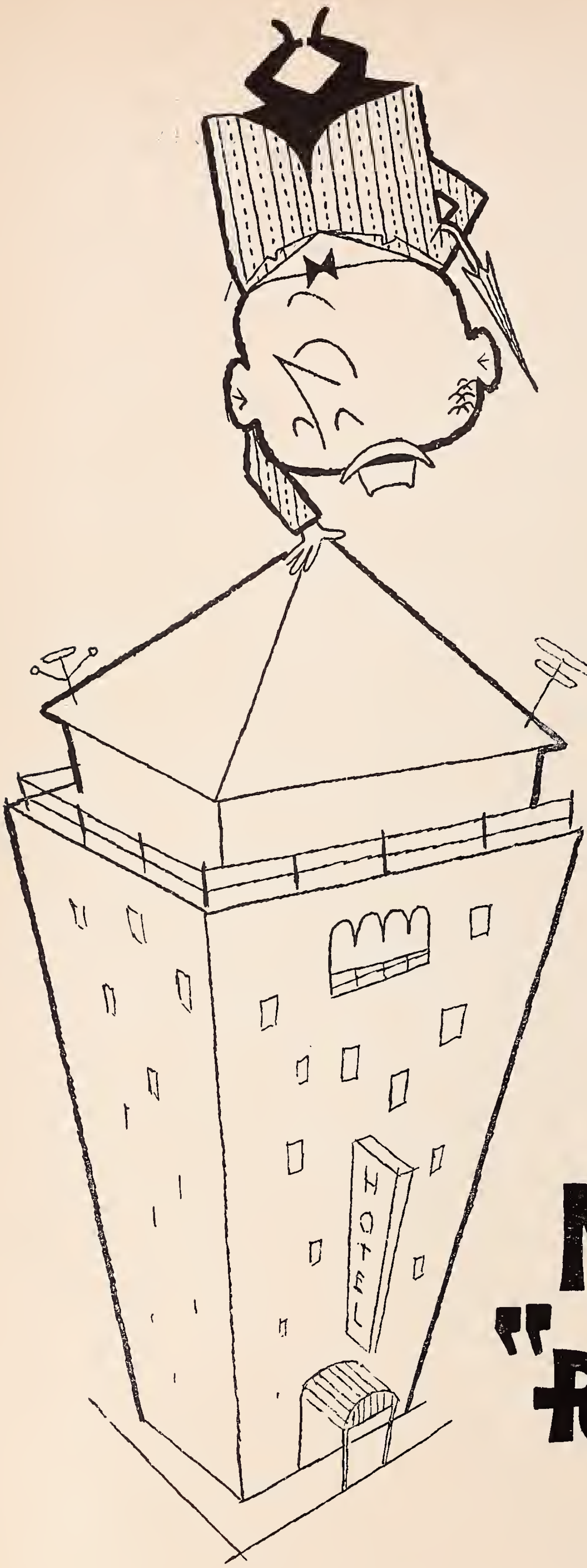

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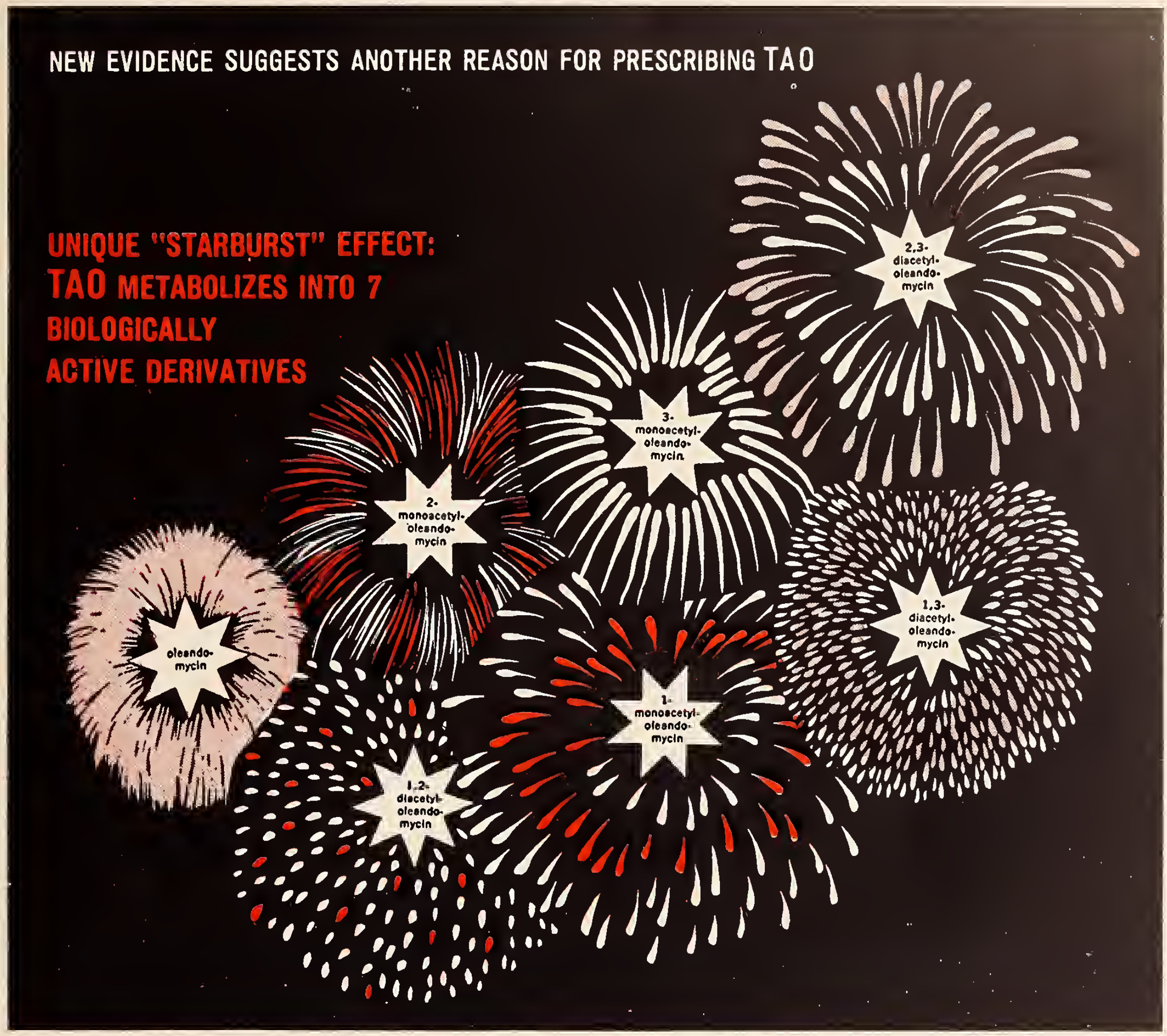
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The impression that TAO is an unusually active antibiotic has steadily gained recognition by impressive clinical performance. Now come reports of **in vivo** and **in vitro** biological and biochemical evaluations that show TAO to be indeed unique.[1,2]

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1. English, A. R., and McBride, T. J.: Proc. Soc. Exper. Biol. & Med. 100:880 (Apr.) 1959. 2. Celmer, W. D.: Antibiotics Annual 1958-1959, New York, Medical Encyclopedia, Inc., 1959, p. 277. 3. English, A. R., and Fink, F. C.: Antibiotics & Chemother. 8:420 (Aug.) 1958.

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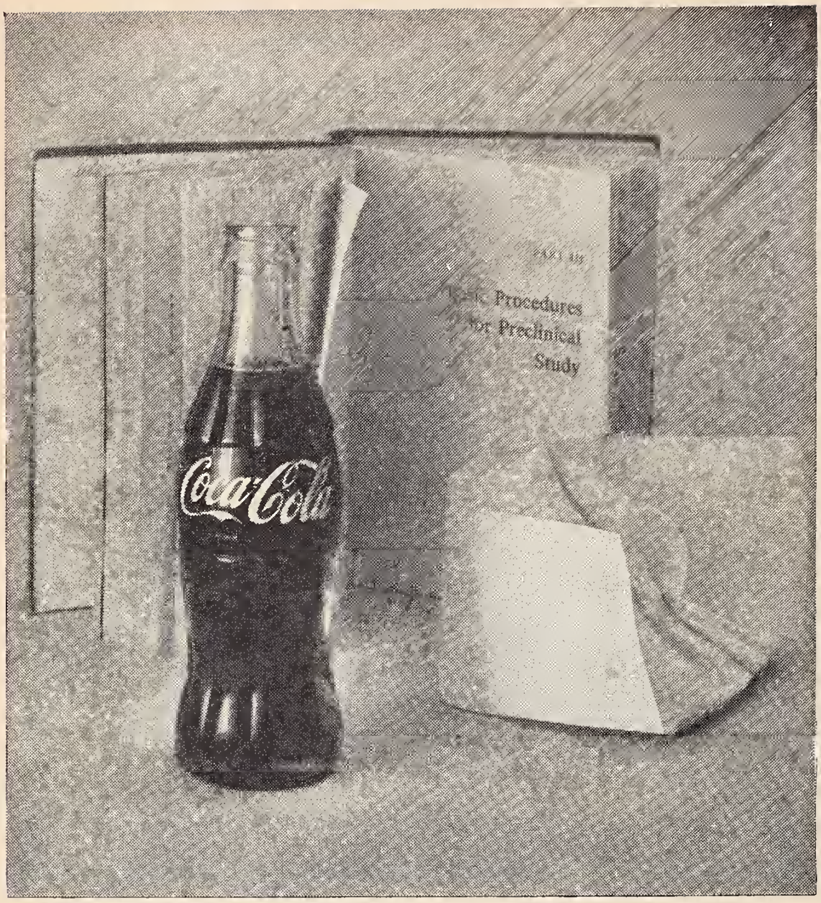

When too many tasks
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a welcome
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often puts things
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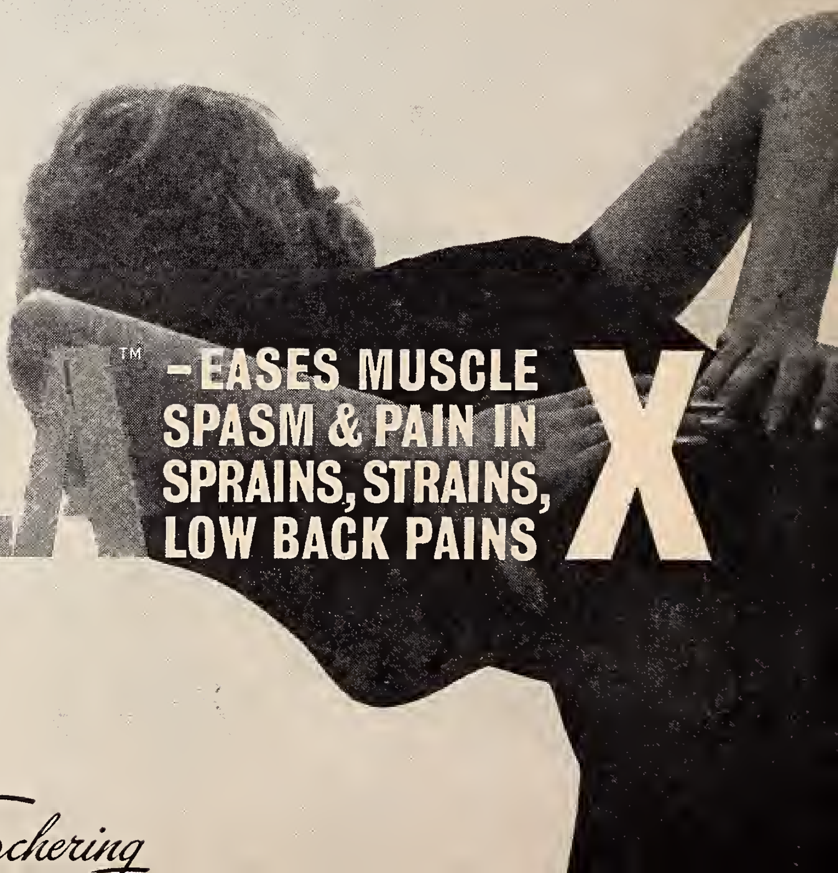

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when self-medication has delayed medical attention . . .

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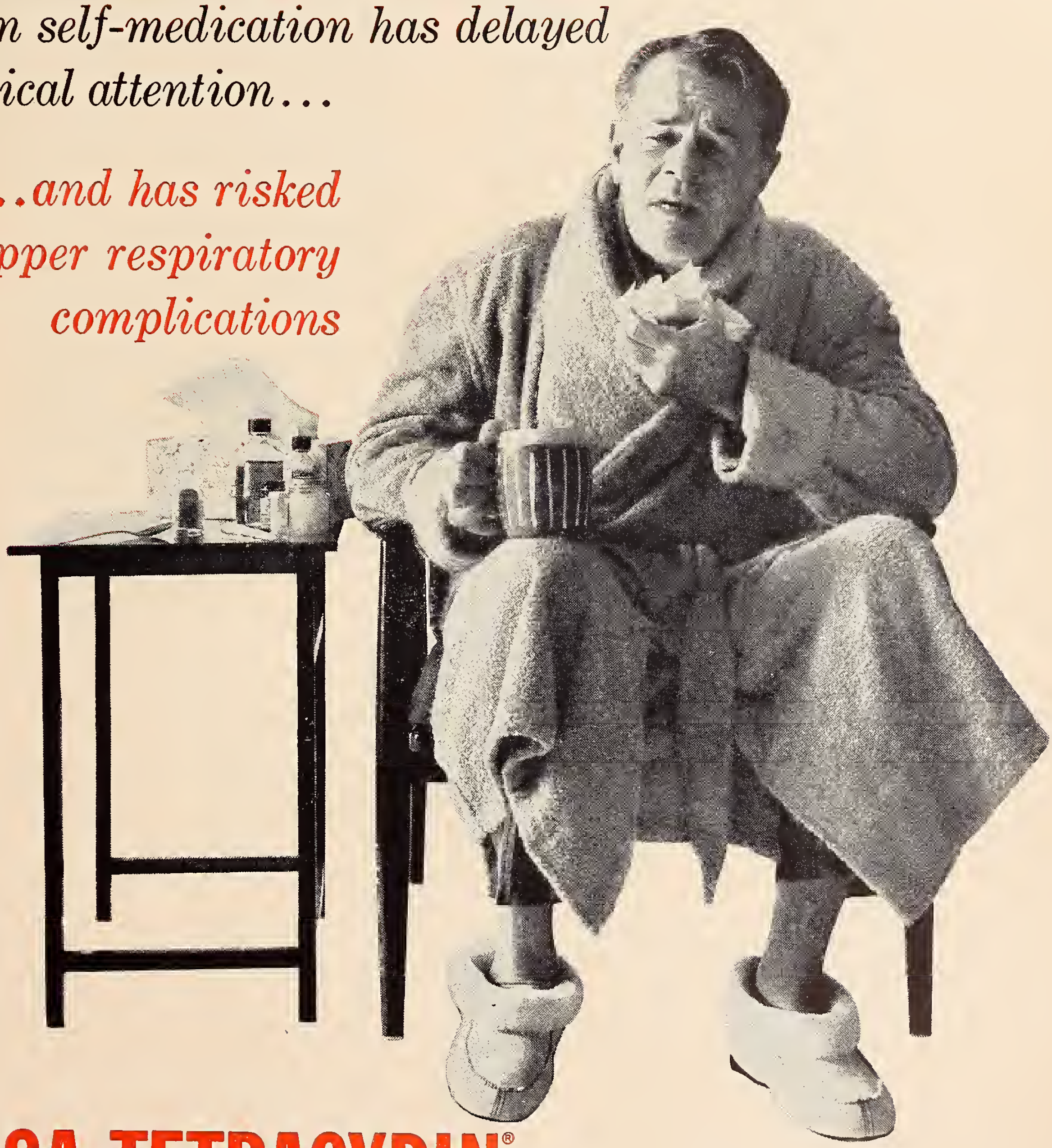

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act quickly to

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Lederle introduces a masterpiece of antibiotic design

Strikingly enhances the traditional advantages of broad-spectrum antibiotics...

for greater patient-physician benefit

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DECLOMYCIN singularly achieves:

- far greater antibiotic activity with far less drug[1,4-6,8,13,14]
- greater stability in body media[4-6,8]
- unrelenting peak activity throughout therapy[4,5]
- "extra-day" protection through sustained activity[1,4]

DECLOMYCIN retains:

- unsurpassed broad-spectrum range of activity[4,6,10-12,14]
- rapid activity[1,4,5,8,13]
- excellent toleration[1-7,9,11,12]
- effectiveness against infection[2-5,7,9,11,12]
- rapid diffusion in body tissues and fluids [1,4,5,8]

[*] *Chlortetracycline* *Lederle* [†] *Tetracycline* *Lederle*

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Milligram for milligram, DECLOMYCIN brand of Demethylchlortetracycline has two to four times the inhibitory capacity of tetracycline against susceptible organisms. Thus, DECLOMYCIN has the advantage of providing significantly higher serum *activity* levels with significantly reduced drug intake.*

Actually, DECLOMYCIN demonstrates the highest ratio of prolonged activity level to daily milligram intake of any known broad-spectrum antibiotic. Reduction of milligram intake of drug reduces hazards of related physical effect on intestinal mucosa.

*Activity level is a far more meaningful basis of comparison than quantitative blood levels, as Hirsch and Finland note. Action upon pathogens is the ultimate value. (Hirsch, H. A. and Finland, M.: Antibacterial Activity of Serum of Normal Subjects after Oral Doses of Demethylchlortetracycline, Chlortetracycline and Oxytetracycline. *New England J. Med.* 260:1099 (May 28) 1959.)

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Unrelenting peak antimicrobial attack throughout therapy

The high level of DECLOMYCIN activity is uniquely sustained. It is not just an initial phenomenon but is constant—maintained on each day of treatment and between doses—without noticeable diminution of intensity. Peak-and-valley control is eliminated, favoring continuous suppression of pathogens and consequent improvement.

This DECLOMYCIN constant is achieved through remarkably greater stability in body fluids, resistance to degradation and a low rate of renal clearance—all supporting antibiotic activity for extended periods.

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Demethylchlortetracycline Lederle

"Extra-day" activity for security against relapse

DECLOMYCIN maintains significant antibacterial activity for one to two days after discontinuance of dosage—a major distinction from other antibiotics. Previous drugs have declined abruptly in activity following withdrawal.

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MYCIN

A masterpiece of

greater antibiotic activity

with far less antibiotic intake

unrelenting peak attack

—enhancing the unsurpassed features of tetracycline . . . for greater physician-patient benefits

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antibiotic design

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plus
"extra-
day"
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FOR PROTECTION
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Reports presented at Seventh Annual Symposium on Antibiotics, Mayflower Hotel, Washington, D. C., November 4-6, 1959: 1. Boger, W. P. and Gavin, J. J.: Demethylchlortetracycline: Serum Concentration Studies and Cerebrospinal Fluid Diffusion. 2. Chávez Max, G.: Therapeutic Evaluation of Demethylchlortetracycline in Human Brucellosis. 3. Duke, C. J.; Katz, S., and Donohoe, R. F.: Demethylchlortetracycline in the Treatment of Pneumonia. 4. Finland, M.; Hirsch, H. A., and Kunin, C. M.: Observations on Demethylchlortetracycline. 5. Fujii, R.; Ichihashi, H.; Minamitani, M.; Konno, M., and Ishibashi, T.: Clinical Results with Demethylchlortetracycline in Pediatrics and Comparative Studies with Other Tetracyclines. 6. Garrod, L. P. and Waterworth, P. M.: The Relative Merits of the Four Tetracyclines. 7. Kanof, N. B. and Blau, S.: A Clinical Evaluation of Declomycin Demethylchlortetracycline in the Treatment of Pustular Dermatoses. 8. Kunin, C. M.; Dornbush, A. C., and Finland, M.: Distribution and Excretion of Four Tetracycline Analogues in Normal Men. 9. Marmell, M. and Prigot, A.: The Use of Demethylchlortetracycline in Gonorrhea, Lymphogranuloma Venereum, and Donovanosis. 10. Olarte, J.: The Sensitivity of Selected Strains of Shigella, Salmonella and Enteropathogenic *Escherichia coli* to Demethylchlortetracycline and Tetracycline. 11. Perry, D. M.; Hall, G. A., and Kirby, W. M. M.: Demethylchlortetracycline: A Clinical and Laboratory Appraisal. 12. Roberts, M. S.; Seneca, H., and Lattimer, J. K.: Demethylchlortetracycline in Genitourinary Infections. 13. Ross, S.; Puig, J. R.; and Zaremba, E. A.: Absorption of Demethylchlortetracycline in Infants and Children: Some Preliminary Observations. 14. Vineyard, J. P.; Hogan, J., and Sanford, J. P.: Clinical and Laboratory Evaluation of Demethylchlortetracycline.

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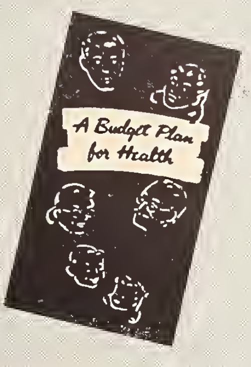
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Never hydrogenated—completely salt free

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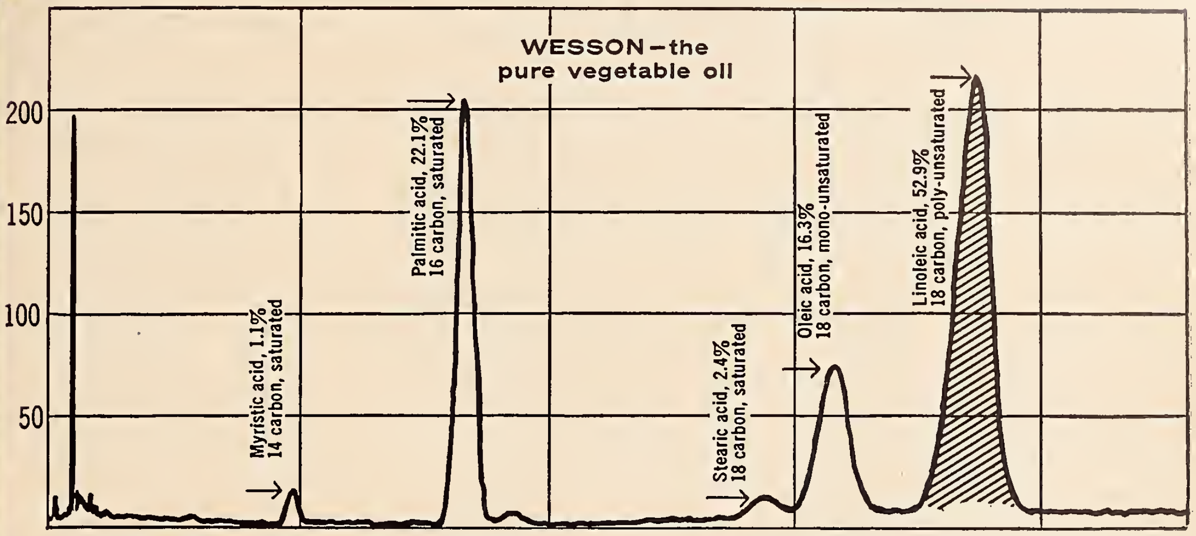

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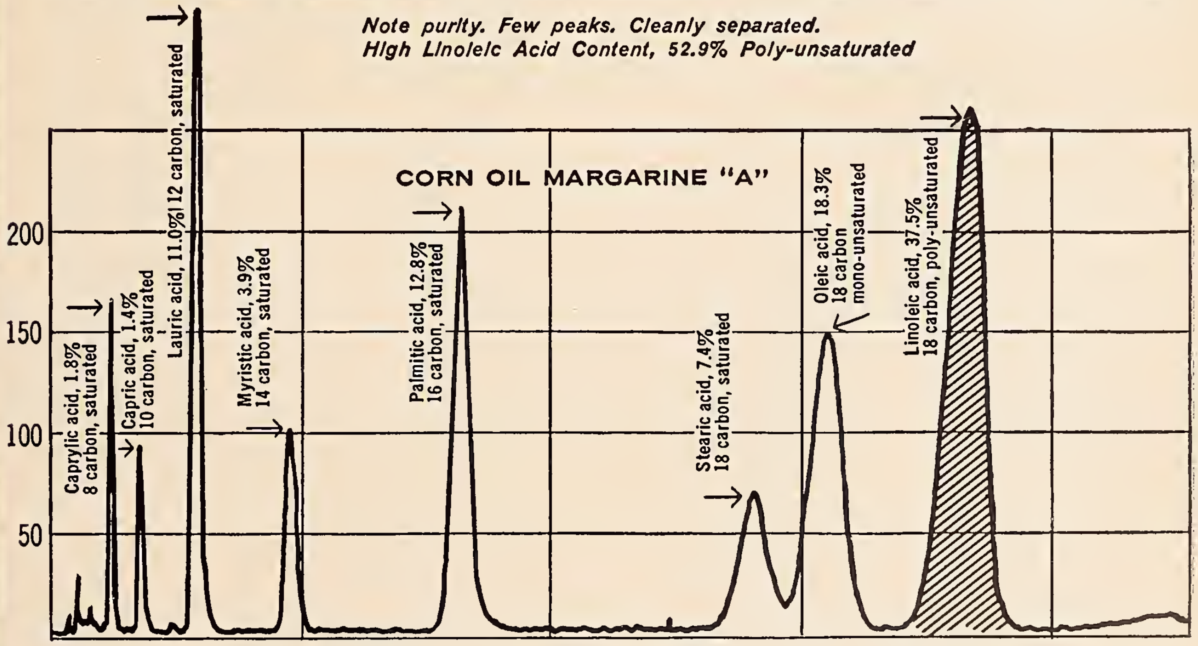
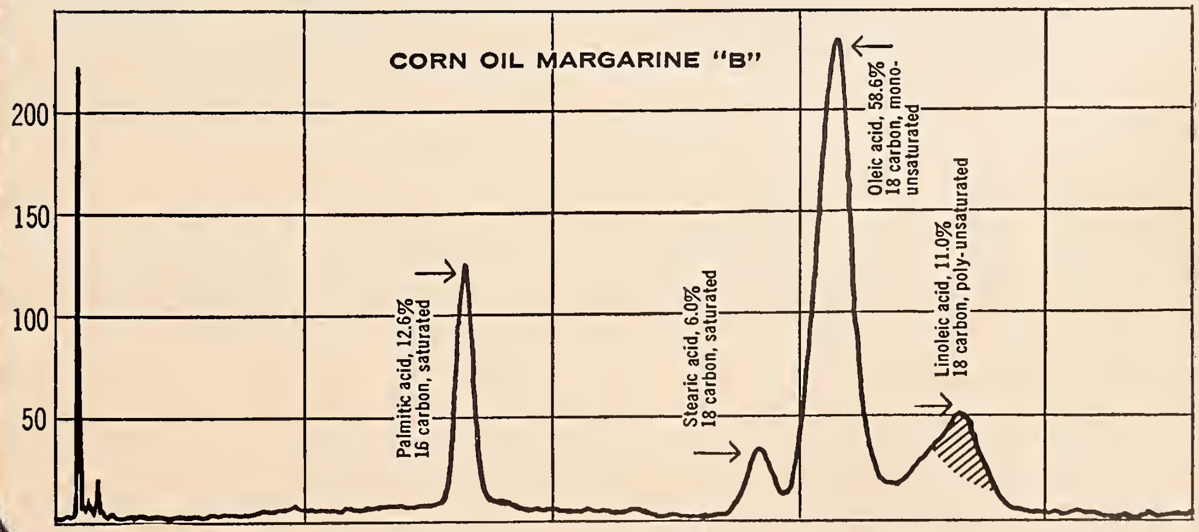
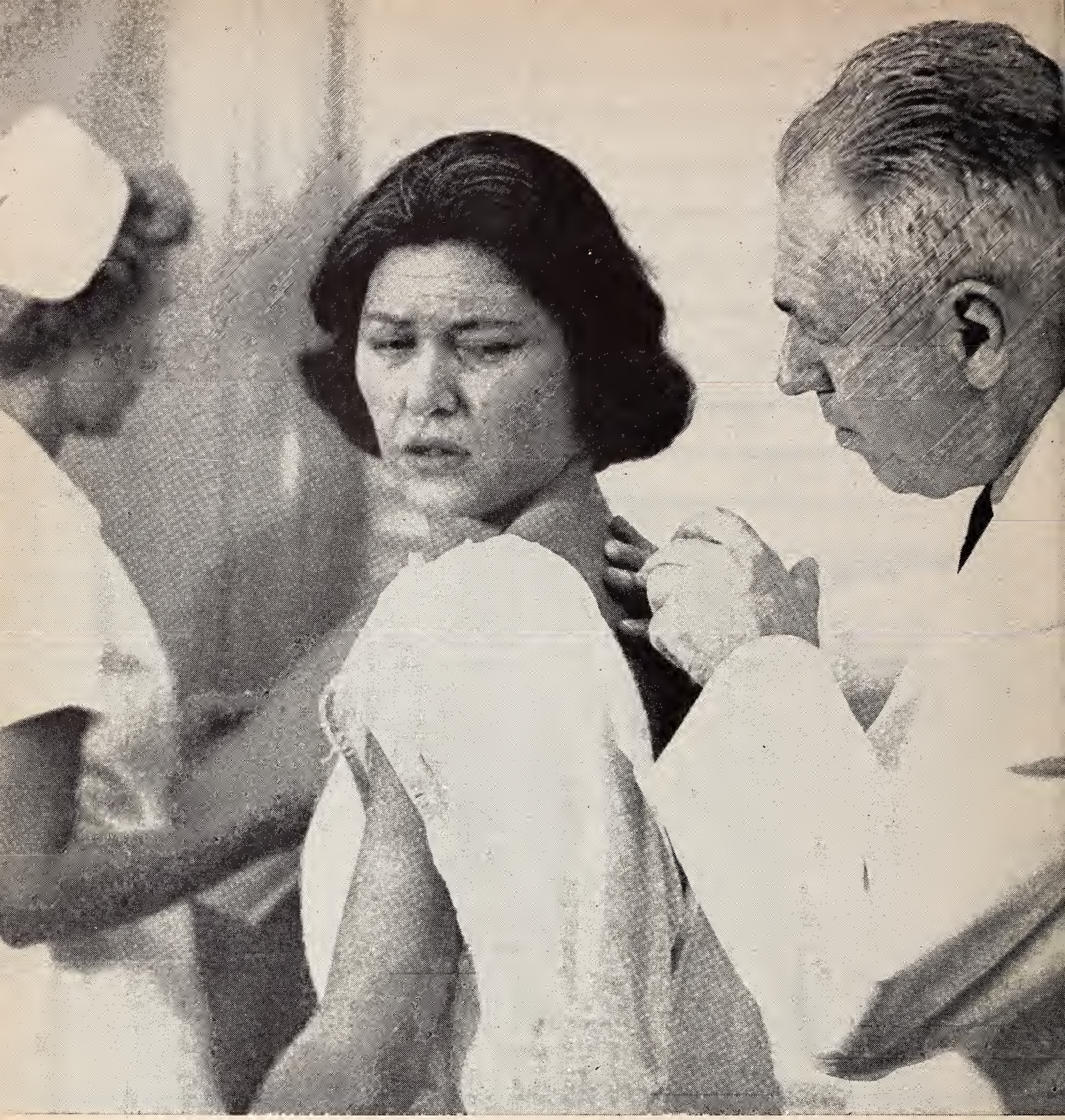


Note effect of coconut oil. Medium Linoleic Acid Content, 37.5%



Note effect of hydrogenation. Low Linoleic Acid Content, 11%



"I feel tired even after a full night's sleep."

Restores normal vitality in

emotional fatigue

Deprol relieves undue tiredness, apathy and depressed moods as it calms anxiety—without the risk of liver damage or extrapyramidal symptoms frequently reported with energizers or phenothiazines.

Emotional or nervous fatigue—undue tiredness, apathy, lethargy and listlessness—cuts sharply into the patient's usual physical and mental productivity. It is one of the most common conditions seen in every medical practice. Untreated, emotional fatigue may mushroom into a depressive episode, anxiety state, chronic fatigue or a mixture of these disorders.

Deprol acts fast to relieve emotional fatigue. It overcomes tiredness and lethargy, apathy and listlessness, thus restoring normal vitality and interest before the fatigue deepens. On Deprol, improvement is achieved without producing liver toxicity, hypotension, psychotic reactions, changes in sexual function or Parkinson-like reactions associated with energizers or phenothiazines.

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and

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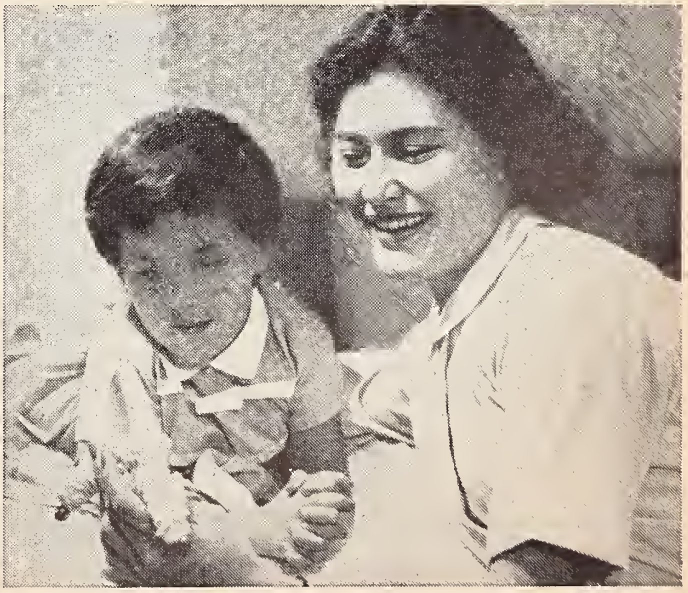

Dosage: Usual starting dose is 1 tablet q.i.d. When necessary, this may be gradually increased up to 3 tablets q.i.d.
Composition: 1 mg. 2-diethylaminoethyl benzilate hydrochloride (benactyzine HCl) and 400 mg. meprobamate.
Supplied: Bottles of 50 light-pink, scored tablets.

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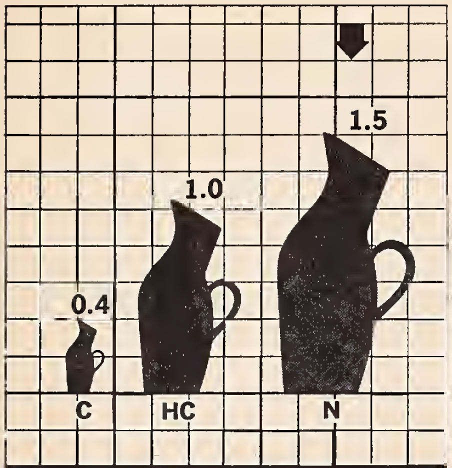
Naturētin

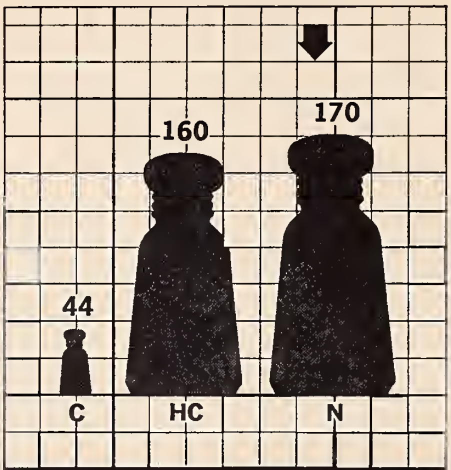
Squibb Benzydroflumethiazide

"When compared to other members of this heterocyclic group of compounds, this drug [NATURETIN] shows a significantly increased natriuresis and decreased loss of potassium and bicarbonate. In this respect it more closely approaches a natural or 'ideal diuretic.' It is effective upon continuous administration and causes no significant serum biochemical changes. It is effective in a wide variety of edematous and hypertensive states and represents a significant advance in diuretic therapy." *Ford, R.V.: Pharmacological observations on a more potent benzothiadiazine diuretic; accepted for publication by the American Heart Journal.*

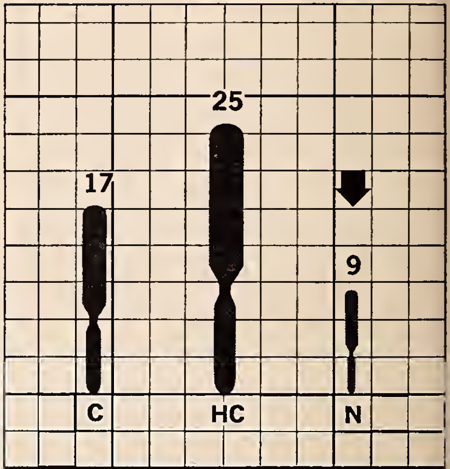
Comparison of electrolyte excretion pattern for the 24 hours following typical doses of chlorothiazide, hydrochlorothiazide, and Naturetin[1]



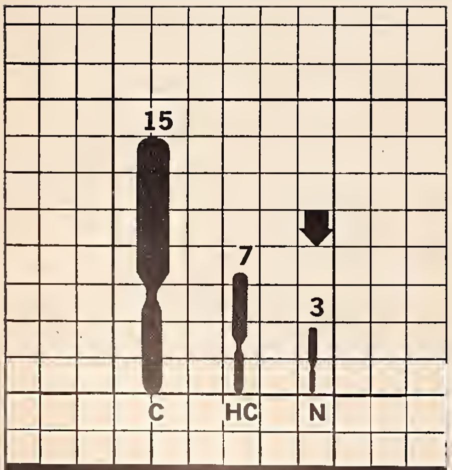
Urinary Volume (liters)
significantly increased
with Naturetin



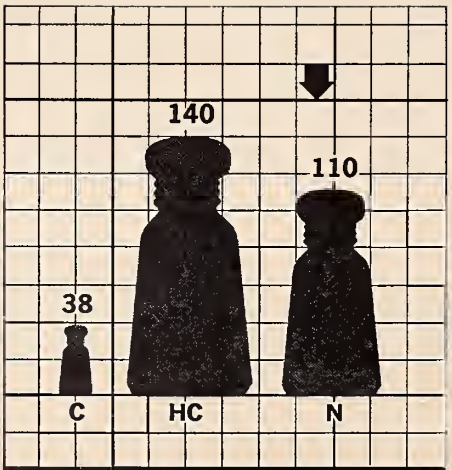
Natriuresis (mEq./24 hr.)
sodium excretion significantly
increased with Naturetin



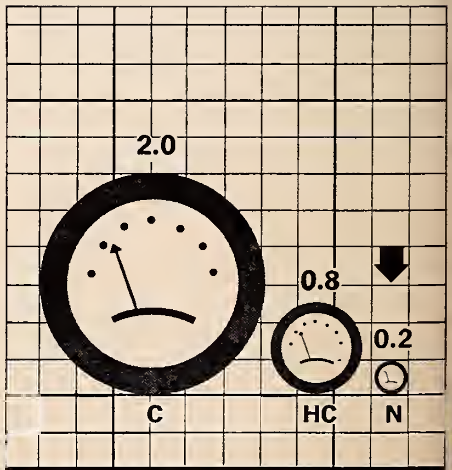
Potassium Excretion
(mEq./24 hr.)
least with Naturetin



Bicarbonate Excretion
(mEq./24 hr.)
least with Naturetin



Chloride Excretion
(mEq./24 hr.)
marked increases



Urinary pH
least increase with Naturetin

Typical Doses: Chlorothiazide – 1,000 mg.; Hydrochlorothiazide – 50 mg.; Naturetin (Benzydroflumethiazide) – 5 mg.

[1] *Adapted from: Ford, R. V., Squibb Clin. Res. Notes 2:1 (Dec.) 1959*

A single 5 mg. tablet once a day provides all these advantages[2]

- prolonged action – in excess of 18 hours
- convenient once-a-day dosage
- low daily dosage – more economical for the patient
- no significant alteration in normal electrolyte excretion pattern
- repetitively effective as a diuretic and antihypertensive
- greater potency mg. for mg.—more than 100 times as potent as chlorothiazide
- potency maintained with continued administration
- low toxicity – few side effects – low salt diets not necessary
- comparative studies with chlorothiazide, hydrochlorothiazide, and Naturetin disclose that smallest doses of Naturetin produce greater weight loss per day
- in hypertension, Naturetin, alone or in combination with other antihypertensives, produces significant decreases in mean blood pressure and other favorable clinical effects
- purpura and agranulocytosis not observed
- allergic reactions rarely observed

[2] Reports (1959) to the Squibb Institute for Medical Research.

Naturētin —*Indications:* in control of edema when diuresis is required, in congestive heart failure, in the premenstrual syndrome, nephrosis and nephritis, cirrhosis with ascites, edema induced by drugs (certain steroids); in the management of hypertension, used alone, combined with Raudixin (Squibb Rauwolfia Serpentina Whole Root), or with other antihypertensive drugs, such as ganglionic blocking agents.

Contraindications: none, except in complete renal shutdown.

Precautions: when Naturetin is added to an antihypertensive regimen including hydralazine, veratrum, and/or ganglionic blocking agents, immediate reduction must be made in the dosage for all preparations; the dosage for ganglionic blocking agents must be decreased by 50% to avoid a precipitous drop in blood pressure. This also applies if these hypotensive drugs are added to an established Naturetin regimen . . . in hypochloremic alkalosis with or without hypokalemia . . . in cirrhotic patients or those on digitalis therapy when reductions in serum potassium are noted . . . in diabetic patients or those predisposed to diabetes . . . when increased uric acid concentrations are noted . . . when signs—leg or abdominal cramps, pruritus, paresthesia, rash—suggestive of hypersensitivity, are noted.

Naturētin —*Dosage: in edema,* average dose, 5 mg., once daily, preferably in the morning; to initiate therapy, up to 20 mg., once daily or in divided doses; for maintenance, 2.5 to 5.0 mg., daily in a single dose. *In hypertension:* suggested initial dose, 5 to 20 mg. daily; for maintenance, 2.5 to 15 mg. daily, depending on the individual response of the patient. When Naturetin is added to an antihypertensive regimen with other agents, lower maintenance doses of each drug should be used.

Naturētin —*Supplied:* tablets of 2.5 mg. and 5 mg. (scored).

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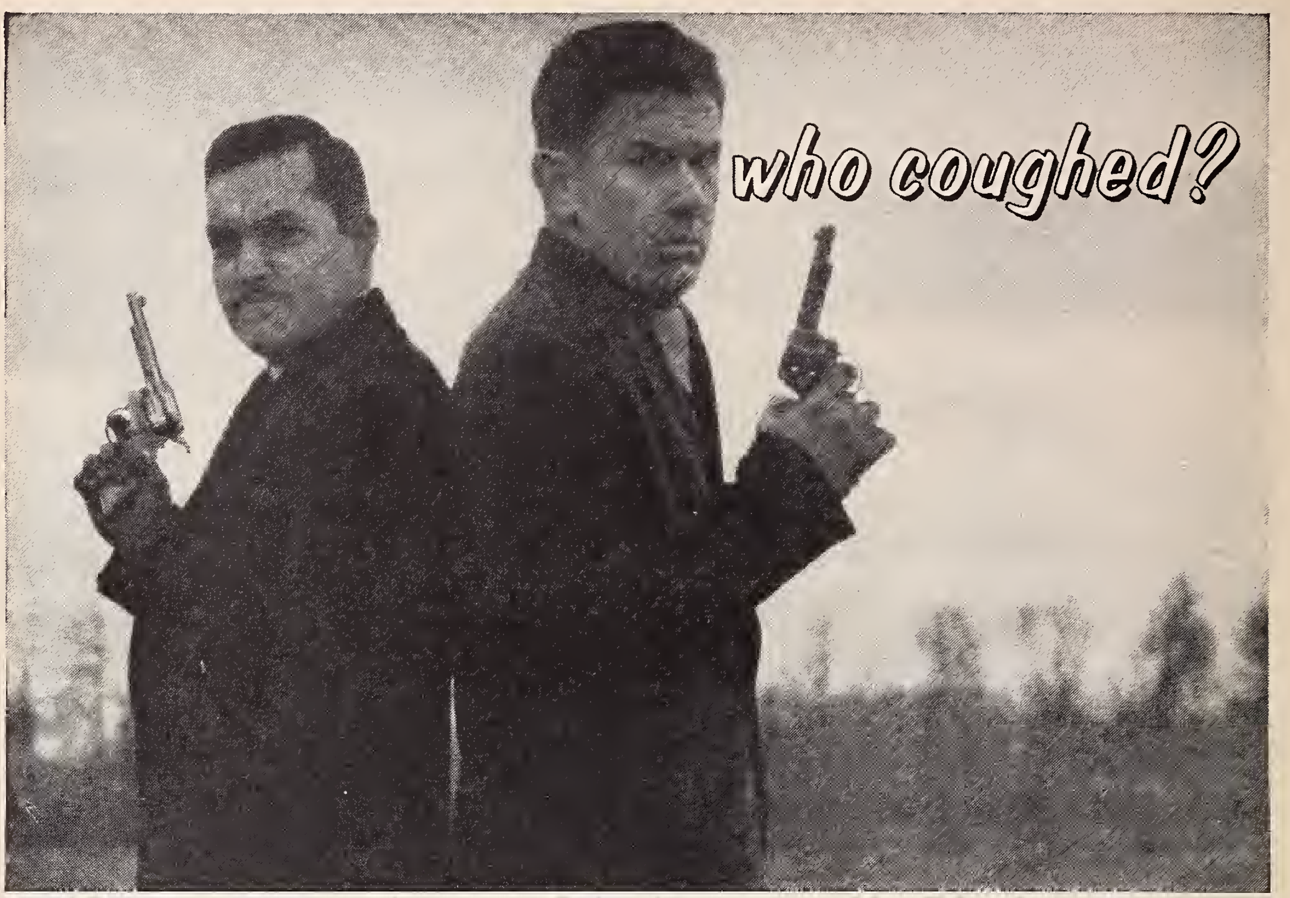
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Pyrilamine Maleate		12.5 mg.
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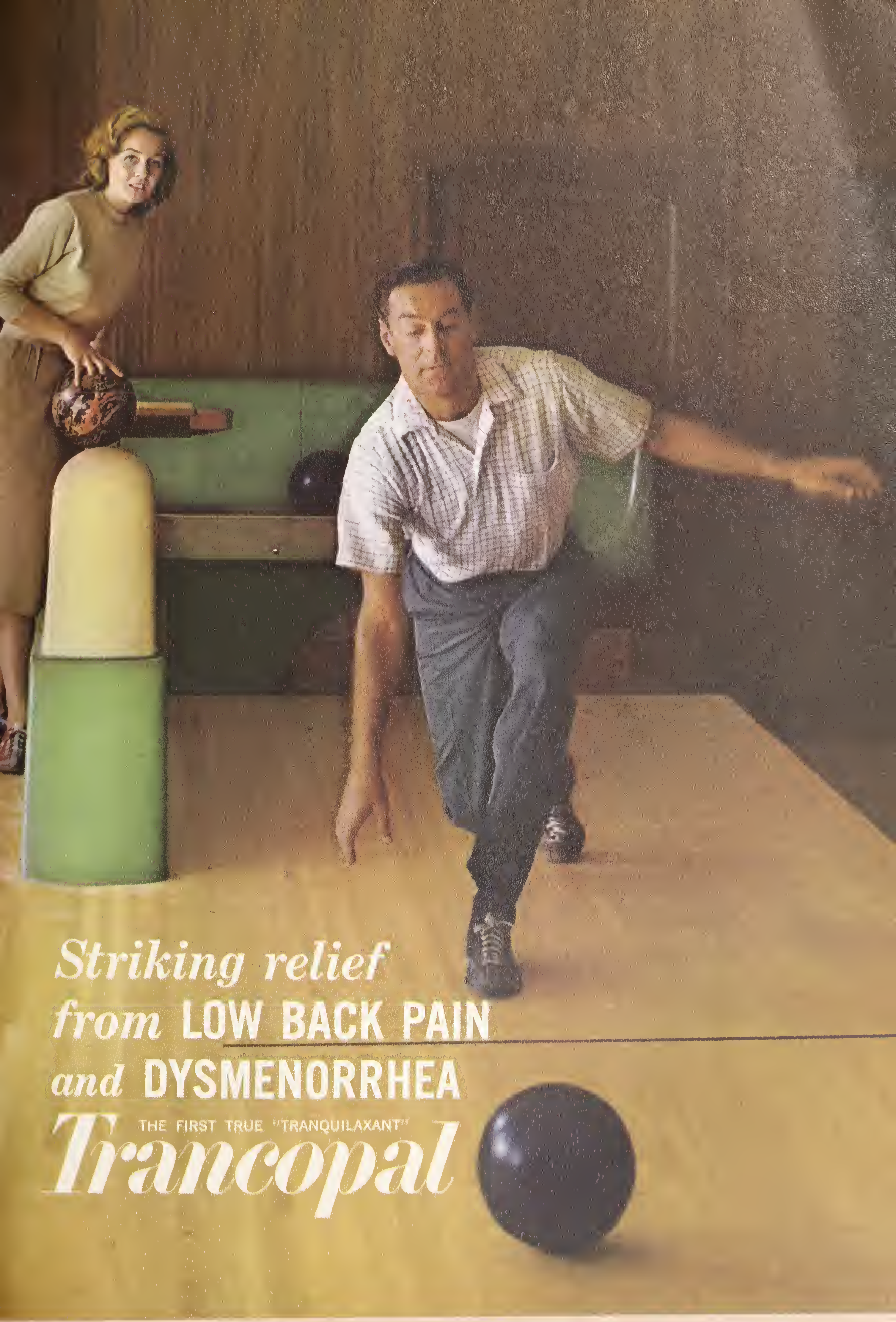
Striking relief
from LOW BACK PAIN
and DYSMENORRHEA
THE FIRST TRUE "TRANQUILAXANT"
Trancopal

Here is what you can expect when you prescribe

Case Profile*

A 28-year-old married woman, a secretary in a booking agency, complained of severe and consistent pain and cramps in the abdomen during her menstrual periods. Psychologically, she described the first two days as "climbing the walls." Menarche occurred at age 13. She has a regular twenty-eight day menstrual cycle and a four day menstrual period.

Trancopal was given in a dose of 100 mg. four times a day for the first two days of the four day period. In addition to the relief of the dysmenorrhea she also noticed disappearance of a "bloated feeling" that had previously annoyed her. She has now been treated with Trancopal for one and one-half years with excellent results. Other medication, such as codeine or aspirin with codeine, had relieved the pain, but the patient had had to stay home. Because her father is a physician, many commercial preparations had been tried prior to Trancopal, but no success had been achieved.

Before taking Trancopal this patient missed one day of work every month. For the past year and a half she has not missed a day because of dysmenorrhea.

for dysmenorrhea

and premenstrual tension

THE FIRST TRUE "TRANQUILAXANT"

Trancopal®

for low back pain

Case Profile*

A 42-year-old truck driver and mover injured his back while moving a piano. The pain radiated from the sacral region down to the region of the Achilles tendon on the right side. X-rays for ruptured disc revealed nothing pertinent. The day of the injury he was given Trancopal immediately after the physical examination. Although 100 to 200 mg. three times a day were prescribed, the patient on his own responsibility increased the dosage of Trancopal to 400 mg. three times a day. This dosage was continued for three days and then gradually reduced over a ten day period. During this time, the patient continued to drive his truck. The muscle spasm was completely controlled and no apparent side effects were noted.

For the past six months, the patient has continued to take Trancopal 100 to 200 mg. as needed for muscle spasm, particularly during strenuous days.

Clinical Reports on file at the Department of Medical Research, Winthrop Laboratories.

Turn page for complete listings of Indications and Dosage.

THE FIRST TRUE "TRANQUILAXANT"

Trancopal

potent MUSCLE RELAXANT

effective TRANQUILIZER

- In musculoskeletal disorders, effective in 91 per cent of patients.[1]
- In anxiety and tension states, effective in 89 per cent of patients.[1]
- Low incidence of side effects (2.3 per cent of patients). Blood pressure, pulse rate, respiration and digestive processes are unaffected by therapeutic dosage. It does not affect the hematopoietic system or liver and kidney function.
- No gastric irritation. Can be taken before meals.
- No clouding of consciousness, no euphoria or depression.

Indications [1-6]

Musculoskeletal:
Low back pain (lumbago, etc.)
Neck pain (torticollis)
Bursitis
Rheumatoid arthritis
Osteoarthritis
Disc syndrome
Fibrositis
Ankle sprain, tennis elbow
Myositis
Postoperative muscle spasm

Psychogenic:
Anxiety and tension states
Dysmenorrhea
Premenstrual tension
Asthma
Angina pectoris
Alcoholism

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NEW STRENGTH ▶

Trancopal Caplets,
200 mg. (green colored, scored), bottles of 100.

Dosage: Adults, 100 or 200 mg. orally three or four times daily. Relief of symptoms occurs in from fifteen to thirty minutes and lasts from four to six hours.

Winthrop LABORATORIES
New York 18, N. Y.

References: 1. Collective Study, Department of Medical Research, Winthrop Laboratories. 2. Lichtman, A. L.: New developments in muscle relaxant therapy, *Kentucky Acad. Gen. Pract. J.* 4:28, Oct., 1958. 3. Lichtman, A. L.: Relief of muscle spasm with a new central muscle relaxant, chlormezanone (Trancopal), Scientific Exhibit, Meeting of the International College of Surgeons, Miami Beach, Fla., Jan. 4-7, 1959. 4. Ganz, S. E.: Clinical evaluation of a new muscle relaxant (chlormethazanone), *J. Indiana M. A.* 52:1134, July, 1959. 5. Mullin, W. G., and Epifano, Leonard: Chlormezanone, a tranquilizing agent with potent skeletal muscle relaxant properties, *Am. Pract. Digest Treat.* 10:1743, Oct., 1959. 6. Shanaphy, J. F.: Chlormezanone (Trancopal) in the treatment of dysmenorrhea; a preliminary report, *Current Therap. Res.* 1:59, Oct., 1959.

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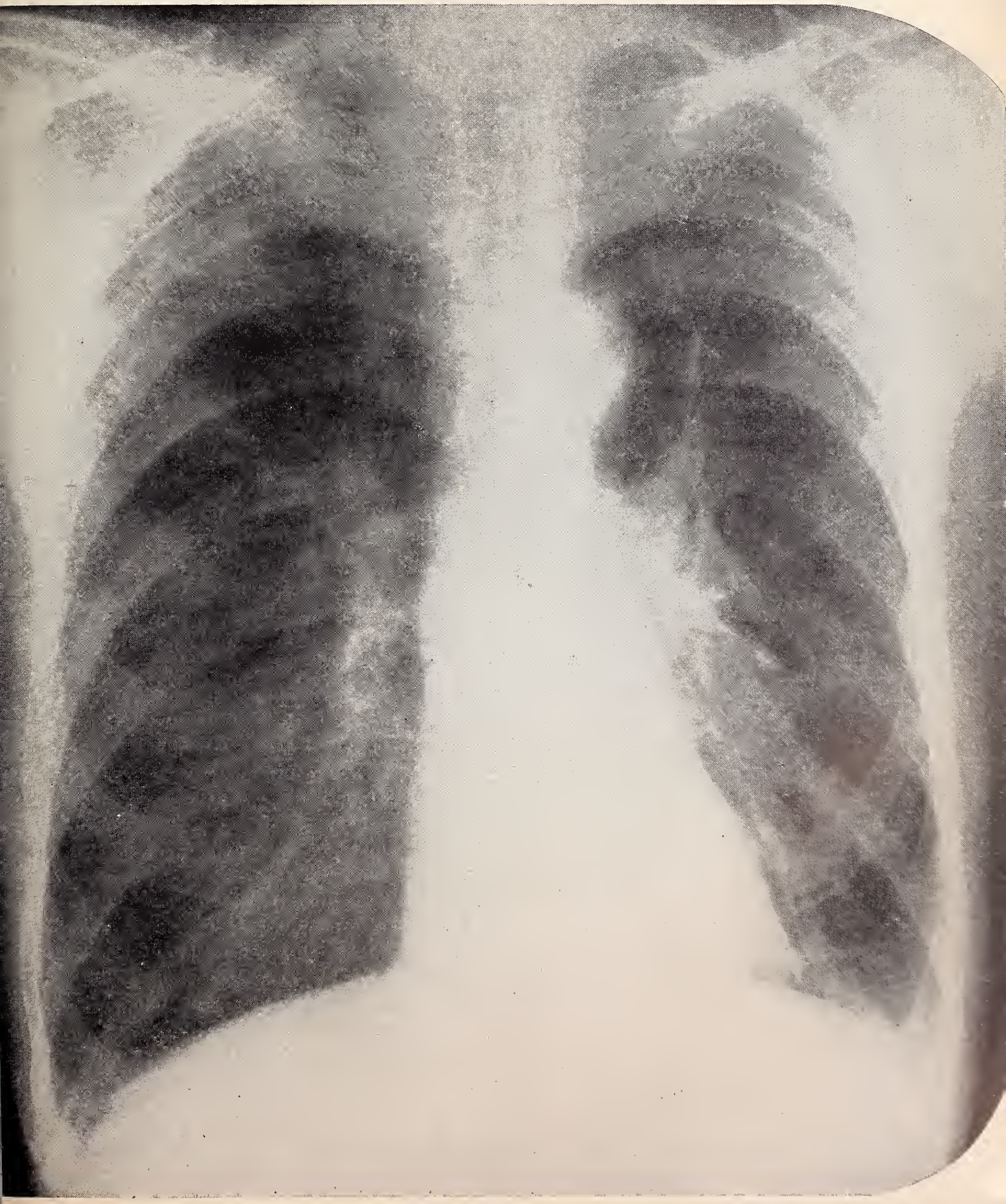

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ARIZONA MEDICINE

VOL. 17, NO. 1 JANUARY, 1960

Arthropod-Borne Disease of Man in Arizona

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". . . . . the human race is in a rather delicate, unstable relation to its environment . . . science is steadily deepening its insight into nature's laws and guided by this insight controlling the daily and hourly conflict of nature with mankind . . . ." — Theobald Smith

SIR PATRICK MANSON, serving as a medical officer on the Island of Amoy off the coast of China, gave the first strong impetus to the investigation of the role of arthropods in the transmission of human disease. Arriving at his station in 1871, Manson became greatly interested in the study of filariasis, which was an extremely common disease among the inhabitants of Amoy. The huge numbers of embryos of the filaria worms in the blood of patients was impressive. Manson reasoned that all the embryos could not continue to develop without destroying themselves by killing the host. They must find their way to other hosts. It occurred to him that some blood sucking insect was the probable intermediary. Knowing that mosquitoes are particularly abundant in warm climates, and that filariasis is a disease of warm regions, he gave first consideration to mosquitoes as possible vectors.

In 1877-78, Manson fed mosquitoes on a man whose blood was teeming with the embryos. Subsequent examination revealed that the parasites penetrated the wall of the stomach and that many of them continued their maturation in the tissues of the mosquito. In accordance with current beliefs, Manson thought that mosquitoes die and fall in the water after completion of the egg-laying process. This would give opportunity for the release of the filaria embryos in the water and thus infect persons drinking the water(1). Following up these observations, Manson found that in only one of the common local mosquitoes did the development of the embryo proceed to completion.

It was not until 16 years later that other workers demonstrated that infection with filaria in the human is accomplished by the deposition of the fully developed larva by the mosquito on the skin in the act of biting and feeding. To Manson goes credit for discovering that a particular blood-sucking insect is a necessary intermediary in the propagation of a specific disease.

The most significant demonstration of the importance of insects in the transmission of disease took place between 1889 and 1893 by two American workers, Theobald Smith and F. L. Kilborne. In a series of nicely planned, thoroughly scientific experiments, they showed that ticks are the primary agents in the transfer of Texas cattle fever from one animal to another.

Manson had shown that a mosquito could take up an animal parasite from the blood and act as host. Smith and Kilborne went further by proving that after feeding on infected cattle, adult ticks drop to the ground to lay their eggs and that the infectious agent passes through the egg to the next generation of the tick, which may attack susceptible cattle and transmit the disease.

The most impressive demonstrations of the importance of arthropods in the spread of human disease were, of course, Ronald Ross's proof that mosquitoes can convey malaria infection from bird to bird and the confirmation of Carlos Finlay's theory of mosquito transmission of yellow fever by the U. S. Army Commission in 1900. Both yellow fever and malaria were diseases of tremendous importance to the human race, and the possibility of their control gave great promise for the future.

The first decades of this century saw steady progress in clearing up the epidemiological puzzles surrounding several important diseases. The role of the rat flea in the spread of plague, of the louse and the flea in typhus, of the mosquito in dengue, and of the tick in spotted fevers are only a few of the triumphs gained by scientific workers. The story of these investigations has been well told in a number of review papers. (2, 3, 4, 5)

The Situation in Arizona

The investigation of arthropod-borne disease of man in Arizona has been altogether fragmentary and incomplete. Although references to some work done in this state have no doubt escaped the attention of the author, it appears that a number of extensive surveys will be required to round out the Arizona picture in a comparatively satisfactory manner.

NON-BLOODSUCKING FLIES:

The mouth parts of these flies are equipped for taking up fluids, but not for piercing the skin. Their eggs may be deposited on manure, human feces, dead animals, or other decaying organic matter. The adults of many species feed on filth or human food and they will take blood, if made available by exposed wounds. After feeding, flies habitually regurgitate small drops of fluid and they may contaminate human food either by this regurgitated material or with their feces. Flies may also become contaminated externally with pathogenic organisms from feces, pus, sputum or other materials and may transfer these infectious agents to animal hosts. The best known representative of this group is the common house fly *(Musca domestica).*

Almost any communicable disease in which the infectious agent is excreted through the intestinal tract can be transmitted by non-blood sucking flies. From studies carried out by the United States Public Health Service during the past few years(6), it appears that various types of summer diarrheas, especially those of the dysentery group, are frequently carried by flies. The salmonella group of infections are also fly-transmitted in unsanitary conditions. The enteric group of viruses, which includes poliomyelitis, Coxsackie infections and others of importance, are becoming increasingly common or at least are being recognized more frequently. The possibility of flies acting as vectors in these infecttions must always be kept in mind.(7).

BLOOD-SUCKING FLIES:

Being equipped to pierce the skin and draw blood, these flies are well adapted for the biologic transmission of disease. Vectors of known importance are found among the mosquitoes, sandflies, gnats, black flies, horse flies and others.

Aside from mosquitoes, the blood-sucking flies are not known to be of great importance in the spread of disease in Arizona. Tularemia may be an exception, as it is known to be transmitted at times by the bite of the deer fly. Tularemia was first described in 1910 as occurring among ground squirrels in Tulare County, Calif. *Pasteurella tularensis,* the causative agent, is harbored by many species of wild animals, by a number of domestic animals, and by the wood tick, *Dermacentor andersoni.* Transmission to humans occurs in several ways: by infecting the skin in the dressing of animals, especially rabbits, which are carrying the organisms; by the bite of certain arthropods including ticks and the deerfly *(Chrysops discalis);* and following the ingestion of infected meat that is insufficiently cooked, or contaminated drinking water.

Cases of tularemia are reported sporadically in Arizona mostly from the northern half of the state. (See Table). No information on the mode of transmission involved in these human cases is available.

MOSQUITOES:

Malaria — Although vectors of malaria have been found along the irrigated valleys of Arizona, malaria has never been an important endemic disease in this state. Sporadic cases are reported each year and a considerable increase in the number of cases occurred with the return of military personnel from the tropics following World War II and the Korean campaign. Maxcy(8) in his survey of the distribution of malaria in the United States for the period 1919-1921 does not include Arizona among those states reporting as much as one death per 10,000 population from malaria. Barber, Komp and King(9) in their study of malaria in the southwestern United States from 1926-1928 visited the Salt River Valley. They state that "in the course of a short survey in July 1928, we found anopheles larvae *(Anopheles pseudopunctipennis)* on acquatic vegetation in the Salt River at Tempe. Very few cases of malaria have been reported from this region, and all have a history of infection elsewhere."

In a recent survey of malaria-carrying mosquitoes of the West, Aitken(10) states that there are two principal anophelines in Arizona, *Anopheles pseudopunctipennis*, and *Anopheles maculipennis freeborni*. He concludes that of these, *A. maculipennis freeborni* is the most important, if not the only vector of malaria in the West, particularly in the irrigated regions. No extensive survey of the anopheline fauna in Arizona has yet been undertaken, but given the presence of the vector and an infected human, small outbreaks of malaria might readily occur in a number of areas in Arizona. See Table for the distribution of recent, reported cases of malaria in Arizona.

Encephalitis: Numerous outbreaks of what is now known to have been virus encephalitis have been observed among horses in various parts of the United States over a period of about a century. It was not until 1930 that Meyer(11), studying an outbreak in California, isolated a neurotropic virus from the brains of horses dying of the disease.

In the years since the identification of the virus of equine encephalitis, a vast amount of laboratory and field work has been undertaken to elucidate the nature and extent of the encephalitis problem. Three distinct types of virus have been identified as causative agents of encephalitis in the United States. The Eastern type is generally found along the coastal areas of the Atlantic and Gulf of Mexica, while the Western and St. Louis types are more commonly found west of the Mississippi River. Infections occur chiefly during the summer months and in the early fall, when mosquitoes are most numerous and most active. Wild and domestic birds are the principle reservoirs of infection. Horses and man are only incidentally infected and are not important in the spread of the disease. Mosquitoes once infected with virus harbor it throughout their life span. It is thought that some mosquitoes overwinter in caves, rodent burrows and such protected spots, thus maintaining the agent locally to the next season. Some investigators have suggested that virus might be re-introduced to the United States each spring by birds migrating from tropical regions.

Whatever the explanation may be, encephalitis is endemic in the irrigated valleys of the southwestern states. Here the hot seasons bring optimal conditions for the production of mosquitoes and the continuous water supply; shelter and food attract multitudes of birds.

In the human, infection with encephalities viruses produces a variety of reactions. Many individuals are merely immunized by subclinical infections. This can be demonstrated by appropriate laboratory tests. Others develop mild influenza-like illnesses, which again can only be identified by the laboratory. These cases resemble non-paralytic poliomyelitis. Several infections usually have an acute onset, high fever, meningeal signs, stupor, disorientation, coma, spasticity, tremors and rarely some spastic paralysis. Fatality of clinical cases ranges from 5 to about 20 per cent. Diagnosis can be made by demonstrating a rise in antibody in serum specimens collected in the initial and convalescent stages of the illness. The virus may be isolated from the brain in fatal cases.

In the Southwest, the common mosquito, *Culex tarsalis*, is the usual vector of both St. Louis and Western Encephalitis viruses.(12). Since this mosquito is wide-spread in distribution, occurs in large numbers, feeds freely upon man, horses and birds, is highly susceptible to infection with the virus, and transmits the infection by bite with great efficiency, it fulfills the requirements for both endemic and epidemic vector.

In the reports of the Arizona State Health Department, one finds sporadic cases of infectious encephalitis over a long period of years. Reports of occasional cases also have appeared in the medical literature.(13, 14, 15). Apparently, the first epidemic reported in Arizona was described by Meikleohn and Hammon, of the Hooper Foundation in San Francisco. (16, 17). Those affected in this outbreak were all members of the families of migratory workers on farms in Pinal County. This outbreak occurred in July, August and September of 1941. There were 13 males and five females hospitalized. No deaths occurred, but six individuals had residual symptoms for varying lengths of time. One had permanent mental and motor damage. Encephalitis had been observed locally in horses before cases appeared among the human population. It was thought that most of the cases were due to infection with St. Louis virus, but there was evidence too that the Western Encephalitis virus was also active in the same area.

During recent years, 1951-58, from five to 12 cases of infectious encephalitis are reported in Arizona each year (See Table). The disease appears to be widespread, but most of the cases have been discovered in Maricopa, Pima, and Yuma counties.

CONE-NOSE BUGS (Also known as Kissing or Assassin Bugs):

This is a large bug family, most of whose members being in the main beneficial. Some species have acquired the habit of sucking blood. Ordinarily they feed on rodents and other small animals in whose nests they are commonly found. All of them will bite, and frequently the bites are painful, if picked up and handled carelessly. Some bugs enter houses and bite sleeping persons during the night. This usually is confined to poorly constructed, unsanitary houses.

A number of surveys beginning about 1936 have shown that cone-nosed bugs are readily found in many areas of Arizona(18, 19, 20). The bugs were mostly found in the nests of wood rats in Cochise, Santa Cruz, Pima, Pinal, Maricopa, Yavapai, and Yuma counties. On numerous occasions these bugs have been found to be naturally infected with the trypanosomes of Chagas's disease *(Trypanosoma cruzi).* Infections with this trypanosome have also been found in opossums, wood rats, deer mice, house mice, bats, and armadillos. These observations are all from southwestern states. Such mammalian infections are considered to be associated with high infection rates in the bug vectors which live in close association with the animals. The infectious stage of the life cycle of the trypanosome is completed in the hind-gut of the bug and the parasite reaches the victim in the feces of the vector, which almost invariably defecates on the skin of the animal while in the act of sucking blood.

American trypanosomiasis (Chagas's disease) was first described in Brazil by Carlos Chagas in 1909. It is now known that this parasite is widely distributed in many parts of the Americas. In the United States, infected insects have been found in Texas, Arizona, and California.

Two forms of the disease in the human have been described. The acute form, usually seen in young children, is characterized by fever, lymphocytosis, edema of the face and eyelids, and neurological symptoms ranging from simple irritability to those resembling encephalitis. Trypanosomes can be demonstrated in the blood during the acute phase. A chronic form of the disease succeeds the acute phase in those children who survive. It may also be seen in adults. Symptoms of the chronic form are dependent on the localization of the parasites. Cardiac, adrenal, and neurotropic forms have been described. Except for periods of febrile relapse, trypanosomes are difficult to find in the blood of chronic cases.

In 1955, the first human case of trypanosomiasis was reported in this country in a 10-month old child in Corpus Christi, Texas(21). Diagnosis was confirmed by finding the parasite in the blood. No cases have been reported in Arizona, but in view of the endemicity of the infection in mammalian reservoirs and the constant presence of the vectors in the vicinity of many homes, physicians should keep the possibility of this disease in mind.

FLEAS:

Fleas are totally wingless, minute bloodsucking ectoparasites of warm-blooded animals. They like warmth and leave a host soon after it does to seek other hosts, not always of the same species. Some fleas are restricted to one type of host, but others infest a wide range of animals. In the absence of the preferred host, many fleas will feed on the blood of other available animals. The mouth parts of the flea are adapted for piercing and sucking. Generally, the female requires a blood meal to become capable of producing fertile eggs.

Murine Typhus: Typhus has probably been endemic for a long time in the South, but was first definitely identified some 30 years ago. The rat flea was shown to be the vector of murine typhus in 1931. From 1940 to about 1946 murine typhus reached almost epidemic proportions, but with the introduction of DDT and of rat control measures around homes, stores, barns and warehouses, cases of typhus fell to low figures by 1956(22).

Over 90 per cent of human cases of murine typhus have occurred south of a line drawn from Charleston, S. C. to Dallas, Texas. A few cases occur periodically in southern California and sporadic cases are reported in Arizona from time to time. (See Table).

Plague: Following the epidemic of plague in San Francisco at the beginning of this century, an epizootic in ground squirrels was noted in the nearby rural areas. Plague was conclusively demonstrated among these rodents in 1908 and since that time extensive investigations have been carried out by the United States Public Health Service and other agencies in the western states. Attention of these investigators was at first focused upon the larger colonial rodents, and it was thought that the primary reservoirs of plague were ground squirrels, wood rats, and prairie dogs. More recently there has been a growing conviction among investigators(23) that rodents other than the large colonial types may be the more usual reservoirs of the infectious agent. Meadow mice *(Microtus spp.)* and white-footed mice *(Peromyscus spp.)* and their fleas were discovered to be infected with plague in areas where the larger rodents were scarce.

Sylvatic plague is now known to be established in wild rodents and their fleas in a large area of western United States. Some hold that plague was introduced to the native rodents from the urban rat population at the time of the San Francisco epidemic, and that the disease has spread eastward to the interior states from the California focus. A second group of workers consider that plague has been endemic in the sylvan rodents of North America for a long period of time.

The available data strongly indicates that plague is widespread in northeastern Arizona(23). Most positive findings in field studies have come from localities where rodent populations are being much reduced by rapid die-off of animals. In spite of numerous active reservoirs, very few cases of human plague have been reported in this country. Man usually becomes infected by immediate contact with sick or dead rodents. From 1908 to 1956, only 92 human cases were discovered in the United States. 58 of these were fatal. Of these one occurred in Arizona, in Ganado, July 1950.

The introduction of plague into domestic rats from sylvanic rodents is probably uncommon, although it might occur. Such an introduction into a domestic rat population would cause a sharp epizootic, which might result in some human cases before it was discovered and brought under control.

TICKS:

The food of ticks consists entirely of blood and lymph with both males and females and all immature stages being bloodsuckers. Mammals, since they are warm blooded, are particularly attractive to these parasites. Ticks are highly important as transmitters of diseases of man and animals. Most species have a wide host range. Other factors adding to the vector potential of ticks are: (1) longevity (the span of life of some species may be over five years); (2) the great reproductive potential (some species deposit as many as 18,000 eggs); (3) their persistent bloodsucking (attaching firmly while feeding, they cannot be dislodged easily); and (4) their ability to pass many types of infective agents through the egg to the next generation.

Relapsing Fever: It was not until 1904 that workers in Africa proved that ticks could transmit a human disease, relapsing fever. In this country, the earliest known endemic focus of tick-borne relapsing fever was discovered in the mountains of Colorado, near Denver, in 1915. A few years later cases were reported in the mountainous area of California near Lake Tahoe(24).

Tick-borne relapsing fever is now recognized as being endemic in at least 13 of the Far Western states and new foci are still being discovered from time to time. Most of the cases have been reported from California and Texas. A number of rodents are considered to be reservoirs of the disease and probably three or four species of ticks of the genus *Ornithodoros* are responsible for the transmission of the infection to humans. In California, many cases apparently contract infection shortly after opening up summer cottages that had been closed during the winter. Undoubtedly fasting ticks in the cottage left behind by rodents that have nested in the walls or under the floor sought the most convenient source of blood. In Texas, tick infested caves are known to be the source of human infections.

Relapsing fever is an acute febrile illness characterized by short febrile paroxysms lasting a few days, alternating with afebrile periods of three to four days. If untreated, as many as six or seven relapses may occur. Deaths are rare. The etiologic agent is a spirochete, *Borrelia duttoni.* Diagnosis is made by demonstrating the infectious agent in thick smears of blood at the height of a febrile attack. In Arizona, studies on the tick vectors of relapsing fever are inadequate. Probably *O. turicata, O. hermsi,* and maybe *O. talae* are involved in keeping the infection going on an endemic basis among rodents and in the occasional infection transmitted to man.

A number of reported cases of relapsing fever in Arizona have appeared in the literature(25,26). In each instance, the infection was thought to have been acquired in the mountainous areas near Greer, Apache County.

WOOD TICKS:

The most important of the disease- transmitting ticks is the wood tick, *Dermacentor andersoni.* Among the infections for which it is a vector are: Rocky Mountain spotted fever, tularemia, Q fever, and Colorado tick fever. This tick is found in mountainous, wooded, and sagebrush areas in all the western states and in western Canada. Adult ticks feed on the larger animals, and to some extent on small animals such as porcupines and jack rabbits. Larval forms seek smaller animals as hosts, usually rodents. (27).

Rocky Mountain Spotted Fever: This is the most feared disease transmitted by the wood tick. Indeed it is recognized as being one of the most severe of all infectious diseases. The causative agent is *Rickettsia rickettsii.* Clinically this disease resembles typhus, the chief differences being the duration of fever, the severity of the illness, and the time of appearance and distribtuion of the rash.

Rocky Mountain spotted fever was first reported in the mountainous areas of Montana in 1873. For many years it was thought that the disease was limited to the mountainous areas of the northwest United States, but since 1930 it has been discovered in 46 states, Canada, Mexico, and many regions of South America.

In western United States, most cases are reported in April, May, and early June, the season of prevalence of the wood tick. In high altitudes, danger may extend into the summer. It appears that persons living in livestock range country, and particularly those handling sheep, are in greatest danger. Forest service personnel, road builders, prospectors, trappers, hunters, campers, and fishermen are also exposed to danger of infection. The virulance of the disease varies with the locality and depends upon the level of virulence of the strain of *rickettsia* in the local tick population.

Judging from the number of reported cases, the incidence of Rocky Mountain spotted fever in Arizona is low. The wood tick is known to be prevalent in the northern portion of the state. According to reports of the state health department, a case of Rocky Mountain spotted fever occurred in 1932 and one in Apache County in 1945.. For the period 1951-1958 (See Table) 10 cases were reported from Apache, Coconino, Gila, Maricopa, Pima, Yavapai, and Yuma counties.

Colorado Tick Fever: The only known tick-transmitted virus disease of humans found in the United States is Colorado tick fever. This disease was encountered by early settlers in the Rocky Mountain region and was described by army doctors stationed in that area(28). It was not until 1930 that a clear description and the present name was given to the disease. Florio el al.,(29) demonstrated that the causative agent could pass through filters, and later they reported isolation of the virus from naturally infected wood ticks.

The clinical picture of this disease produces a sharp, clearly defined onset with fever, headache, deep ocular pain, and severe aching of the back and legs. After a fever of moderate degree for about two days, there frequently follows a remission that lasts from two to four days. The remission is followed by a relapse of two to three days. This saddleback type of temperature curve is observed in the great majority of cases. A marked leukopenia is usually found, with the lowest point occurring during the relapse. Cases vary in severity from the subclinical to those with grave signs of central nervous system involvement resembling encephalitis. There have been no reported deaths.

The disease is most prevalent at the peak of the tick season in the late spring and early summer. The known geographic distribution of Colorado tick fever is limited to the habitat of the wood tick. Although this tick is known to be prevalent in northern Arizona, no cases of Colorado tick fever have yet been reported from this state. Cases have occurred in Utah and Colorado near the Four Corners area, and virus has been isolated from ticks collected in New Mexico(30).

Q Fever: Another disease in which ticks play an important role is Q fever. This disease entity was first described in 1935 among packing house workers in Australia. As the nature of the outbreak was unknown, the term "Q" for query was applied. The causative agent was found to be a *rickettsia,* but some characteristics of this agent have led investigators to put it in a separate genus, *Coxiella.* Shortly after the original discovery in Australia, an identical organism was isolated from ticks in Montana. During World War II, Q fever proved to be an important cause of illness among allied troops stationed in Italy, Greece, and other Mediterranean areas. In 1946, the first known naturally occurring outbreak of Q fever in this country appeared in Amarillo, Texas, with 55 cases among the employes of three packing houses. Later in that year, a similar outbreak took place in Chicago. In 1947, the occurrence of an unusual type of pneumonia in California led to a survey by the United States Public Health Service which revealed that Q fever is endemic in that state. Subsequently, reports have revealed that Q fever is widely distributed throughout the world, its presence having been reported from 51 countries on five continents.

Q fever usually begins abruptly with fever, chills, headache, myalgia, and anorexia. Fever is remittant in type. In a small proportion of cases, the liver is enlarged and jaundice appears. Pneumonia, similar to viral pneumonia, occurs in the majority of cases. There is considerable variation in severity and duration. The disease may take a protracted course with fever lasting a month or more. However, Q fever is rarely fatal.

The host range of the *rickettsia* of Q fever is very broad, including numerous species of ticks, several insects, many species of wild and domestic animals, and a number of birds. From studies in several parts of the world, it would appear that the basic epidemiological cycle of Q fever is a rodent-tick one. Possibly cattle and sheep acquire infection through the mediation of a tick attacking both the rodent and domestic animals. Under conditions where domestic animals are herded together, it appears that cattle, sheep, and goats pass infection from one to another.

Human infections result from occupational exposure to infected livestock, from residence near infected premises, or from consumption of raw milk. Man, as well as livestock, may contract infection by inhalation of air-borne rickettsiae disseminated from the reservoir in naturally infected animals.

In cattle and sheep, the infectious agent localizes in the gravid uterus or in the lactating mammary glands. During the birth process, huge numbers of rickettsiae are shed with the placenta and membranes. Infective aerosols are generated and may be inhaled to produce infection in susceptible contacts. Infection in man may occur from primary aerosols, or from dust originated from contaminated hides, fleece, etc. (31).

Diagnosis in Q fever is established by isolation of the specific rickettsia, or by demonstration that a rise in antibodies to the rickettsia has occurred in the patient's serum during the course of illness.

Apparently no human cases of Q fever have been reported in Arizona. A survey of cattle sera collected in the southern part of the state in 1958 showed that in at least two areas a large proportion of the cattle tested were strongly positive reactors(32). Around Phoenix about 40 per cent, and around Yuma about 75 per cent of the cattle sera tested were positive. Three other areas (Patagonia, Winkleman, and Sunflower) also had high percentages of positive reactors; however, antibody titers were low, possibly indicating older contact with Q fever. With this evidence of infection among herds of Arizona cattle, human infections are to be expected.

COCKROACHES:

Being omnivorous, cockroaches eat practically every food used by man and his domestic animals, as well as biological waste products such as garbage and sewage. They are found wherever man stores or prepares food. For the most part, cockroaches contaminate food by mechanical transmission of disease-causing organisms in the feces or on its legs and body.

Cockroaches have been shown to harbor naturally or experimentally about 40 species of pathogenic bacteria, especially organisms responsible for gastrointestinal infections.

Modern sewers are ideal habitats for cockroaches. There they may breed and become contaminated with fecal matter and from which they may gain entry to nearby buildings. In addition to bacteria and other disease agents, cockroaches may transmit several viral infections. Poliomyelitis viruses, Cocksackie, and other viruses of the enteric group have been isolated from naturally-infected cockroaches(33).

It is difficult to estimate how important a role cockroaches may play in disease transmission, as most of the evidence against them is circumstantial. There can be little question, however, that in groceries, restaurants, and other establishments handling food for large groups of people, the cockroach represents a considerable health hazard and should be kept under control.

Comment

With the exception of malaria and the enteric group, each of the arthropod-borne infections discussed above are not primarily human diseases. The basic cycle is maintained by passage of the infectious agent back and forth from arthropod to animal. In most instances, the agent is available in the blood stream of the animal host for short periods only, while the organism persists frequently in the arthropod for the duration of the life of the insect. In the case of the tick, the parasitic agent may pass through the egg to the next generation of ticks, thus being maintained for very long time periods. Man and his domestic animals may become infected more or less accidentally and represent a dead-end episode for the parasite.

Q fever appears to be an example of what was once strictly an arthropod-rodent disease that is now becoming an infection contracted by inhalation of airborne rickettsiae. This, at least, seems to be the case in areas where cattle, sheep, or goats are numerous. Perhaps this is a relatively new development due to marked changes in the ecology resulting from increasing numbers of livestock.

Summary

There is little evidence that arthropod-borne diseases are as yet highly important as health problems in Arizona. With extension of irrigation and with increasing numbers of people living near such agricultural areas, outbreaks of encephalitis are likely to become more frequent and to involve larger groups of people.

Also, as more people make use of the recreational areas of northern Arizona, such diseases as Rocky Mountain spotted fever, tularemia, relapsing fever, and Colorado tick fever are likely to be seen more frequently.

Evidence now in hand indicates that Q fever is prevalent among the cattle of Arizona. Experience in other states where this disease is endemic indicates that human cases of this infection are to be expected under such circumstances.

CASES OF ARTHROPOD-BORNE DISEASES AS REPORTED TO ARIZONA STATE DEPARTMENT OF HEALTH, 1951 THROUGH 1958

Counties		*Apache*	*Cochise*	*Coconino*	*Gila*	*Graham*	*Greenlee*	*Maricopa*	*Mohave*	*Navajo*	*Pima*	*Pinal*	*Santa Cruz*	*Yavapai*	*Yuma*	*Total*
Infectious encephalitis	1951		2		2			1	1		1				5	21
	1952	1	1	1				1		1					2	7
	1953	1		1				4			2				3	11
	1954	1		1				4			2				3	11
	1955			1				2					1	1	2	7
	1956			1				2			2	2				7
	1957				1			3							1	5
	1958		2					2			1					5
Malaria	1951		6	1				5			5	3	1	2	14	37
	1952		11	1		2	1	6			14	1		1	4	41
	1953							1								1
	1954							1								1
	1955		1								2		2		1	6
	1956							1			1	1			1	4
	1957		1		1											2
	1958		1	1				1			2				1	6
Rocky Mt spotted fever	1951										1					1
	1955	2			1			1								4
	1956			1							2					3
	1957													1	1	2
Typhus	1956										1					1
Tularemia	1953				2			4	1	1						8
	1954				2			4	1	1						8
	1955									2						2

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Anatomical Factors in Surgery of the Biliary Passages

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SURGERY of the biliary passages is done for symptomatic disease due to inflammation, obstruction, or tumors. Removal of the gallbladder has been recommended for the patient with stones in the gallbladder, although it functions well without symptoms of gallbladder disease. Removal of the gallbladder with stones in a patient who can tolerate surgery will avoid the possibility of gallstone colic; symptomatic acute or chronic cholecystitis; hydrops, empyema, or gangrene of the gallbladder; perforation with diffuse or localized peritonitis; obstructive jaundice, cholangitis, hepatitis, biliary cirrhosis; gallstone ileus; pancreatitis; symptomatic cardiac irregularities; or carcinoma. When any of these complications or sequelae of gallbladder disease is present, an operation appropriate to the nature of the local disturbance and the condition of the patient is indicated.

The patient who submits to surgery for removal of the gallbladder should be assured of recovery and freedom from the symptoms for which the operation is performed. The success or failure of this venture depends on five essential factors.

1. *Diagnosis.* The presence of stones in the gallbladder is not positive evidence that gallbladder disease is responsible for the patient's complaint. Neurologic, hematologic, arthritic, cardiac, pulmonary, or other abdominal conditions may be responsible for symptoms that simulate those of gallbladder disease. Removal of the gallbladder without recognizing other diseases that are responsible for symptoms is not apt to bring relief.

2. *Adequate surgery.* Incomplete removal of a diseased gallbladder or retention of a large segment of the cystic duct may be responsible for recurrence of symptoms. Failure to explore a common duct containing stones, or to establish adequate patency of the ampulla due to stricture, tumor or carcinoma in the pancreas or adjacent viscera are reasons why symptoms persist or why new and more serious symptoms develop. Other significant and symptomatic conditions more remote from the biliary passages must not be overlooked.

The importance of abdominal exploration prior to removal of the gallbladder and of the visualization of the structures concerned in its removal must be stressed.

3. *Accidents.* Injuries to blood vessels, large or small, result in hemorrhage or liver necrosis; and injuries to the hepatic or common ducts, causing leakage of bile or obstructive jaundice, may be followed by prolonged disability or death.

The importance of recognizing the essential anatomy and of maintaining a positive effort to avoid an accident deserves emphasis.

4. *Complications.* Respiratory, vascular, neurologic and other complications incidental to anesthesia and faulty preoperative and postoperative management prevent complete recovery. The postoperative incisional hernia may be more troublesome than the gallbladder disease for which surgery was performed.

The importance of preoperative care, competent anesthesia and surgery, and effective postoperative management should be emphasized.

5. *Noncalculous gallbladder disease.* Patients in this group are notable for the poor results which frequently follow cholecystectomy. It has

been estimated that less than 25 per cent are benefited by surgery. Thus, it is necessary to evaluate this group with a view to selecting for surgery those who are not relieved by appropriate medical management. Faulty eating habits and improper dietary selections must be corrected in some, while antispasmodics, antacids, bile salts, and sedatives must be given to others before relief from symptoms is obtained. Improved bowel habits, rest, relaxation, "peace and quiet" are helpful for all. A prolonged trial period of medical management will eliminate the large number in this group who are not apt to be helped by an operation. The remainder will require surgery. In this smaller group, unsuspected small stones, chronic gallbladder disease without stones, stenosis of the ampulla, chronic pancreatitis, or neoplasms may account for the patient's symptoms. Such patients will be helped after appropriate surgery is done.

This group properly should be considered under diagnosis but, more importantly, emphasis is placed on the careful selection of cases for surgery, especially of those in whom obstruction of the cystic duct or stones in the gallbladder are not demonstrated.

The Operative Procedure

Abdominal wall incision. Anatomic factors related to the abdominal wall incision are its size and the degree of exposure it affords. The incision should be long enough to permit a wide exposure of the field. This will allow: (1) exploration of the neighboring abdominal viscera; (2) visualization of the anatomy concerned in the operation; and (3) manipulation necessary for removal of the gallbladder, probing of the ducts when necessary, and control of bleeding that may be due to accident or disease.

Whether the surgeon prefers the oblique, transverse, or longitudinal incision is not as important as the size of the incision. With satisfactory illumination of the field and gentle, careful retraction by an assistant who is aware of his responsibility not to injure the tissues, most of the accidents that occur can be prevented.

Incisions adapted to the contour of the abdomen take advantage of the good features of each and avoid the disadvantages (Fig. 1). Any avoidable disability is too high a price to pay for a small, inadequate visualization of the field.

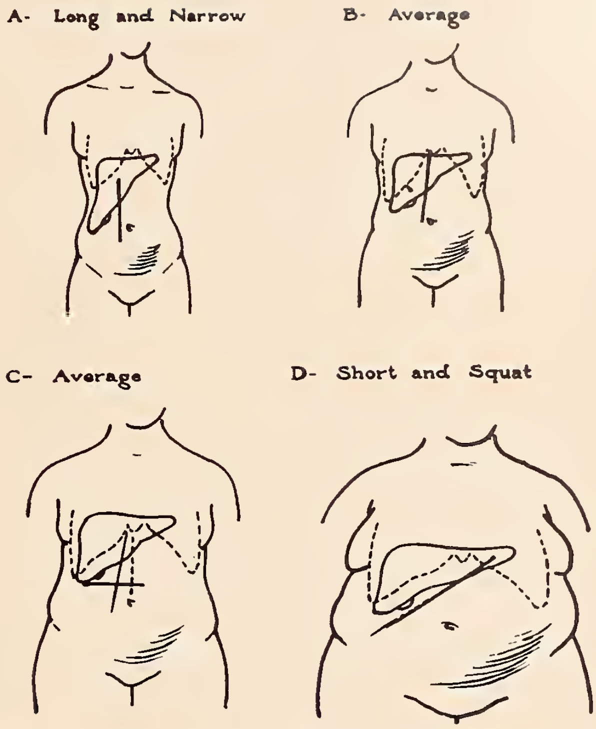

Fig. 1. Selection of an incision adapted to the shape and size of the torso provides a selective exposure. No one incision is universally applicable to all patients when adequate exposure is the purpose.

Exploration. While injuries of the ducts and blood vessels frequently are caused by inadequate or faulty exposure, many patients fail to recover completely with relief from symptoms because of inadequate exploration. In spite of what is regarded as a complete preoperative examination, some intra-abdominal pathologic conditions which produce symptoms, or which interfere with recovery are not detected before surgery. Roentgen studies, too, are not always revealing. However, when the abdomen is opened, a visual or palpatory exploration can be made to detect significant pathologic conditions which can be corrected immediately, or which indicate the need for special postoperative medical care or further surgery (Fig. 2).

Exposure of blood vessels and ducts. Accidents involving blood vessels and ducts may be immediately fatal or result in prolonged disability before recovery takes place. In some patients, recurrent disabling episodes ultimately result in such changes in the liver that recovery is impossible. Thus, one small error may change a prospective good result into a failure, and a patient who might have enjoyed good health is committed to a long period of disability.

EXPLORATION PRECEDING GALLBLADDER SURGERY

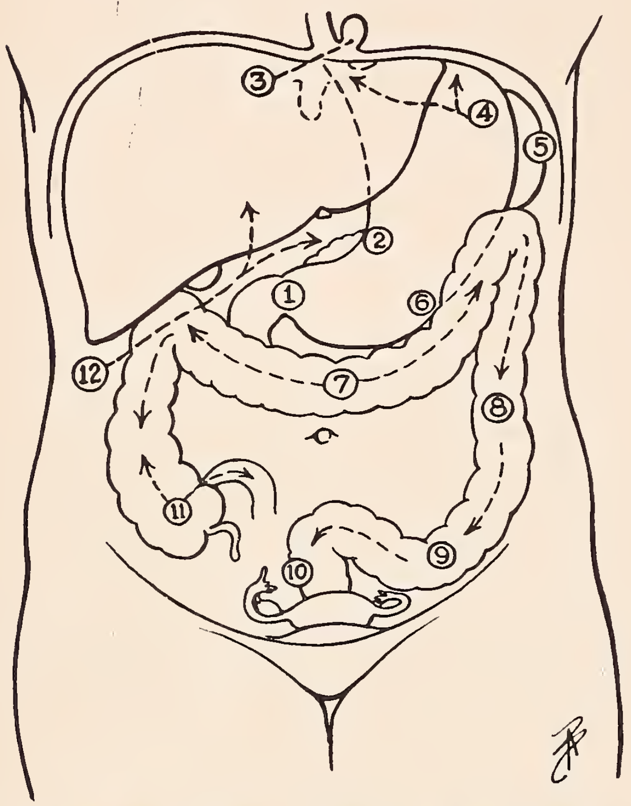

Fig. 2. Sequence of abdominal exploration to detect other conditions or disease concomitantly present in the abdomen. The gallbladder with stones may be asymptomatic. If this gallbladder is removed, persistent symptoms will result to which the term "postcholecystectomy syndrome" is frequently but erroneously applied.

A distended gallbladder is an anatomic hazard. It obscures the ducts and vessels, interferes with exploration of the regional anatomy, and adds to the danger of its removal. The distended gallbladder should be aspirated of its fluid content and emptied of its stones. This aids in visualization of the field and avoids the forceful emptying of stones into the common duct. To facilitate further exposure of the ducts and vessels, the neck of the gallbladder is elevated, and the cholecystoduodenal ligament is opened. The peritoneal edges of this opening are carefully separated until exposure of the extraperitoneal space in which the major ducts and vessels lie is sufficient. Additional mobility of the gallbladder may be obtained by incising the serosa on its lateral aspect and elevating the neck of the gallbladder from its bed in the liver. The common, hepatic, and cystic ducts may now be inspected and the cystic artery or arteries isolated.

Bleeding from torn tiny vessels which obscures the field is controlled by the application of a warm, moist pad with mild compression until the field is dry. This avoids the danger of accidents.

The blood vessels. Cystic arteries vary in number from one to four. All of them should be ligated when it is established that they enter the gallbladder. In an obscure field, the closer to the gallbladder vessels are ligated, the lesser the risk that hepatic vessels will be injured or occluded.

The gallbladder is held to the liver not only by its serosal covering, which is continuous with Glisson's capsule, but also by a cystic artery. This is demonstrated by the ease with which the gallbladder is removed after the cystic artery is severed. During surgery, lateral traction on the neck of the gallbladder causes the cystic artery to become taut. It can now be palpated as a "wire" and thus identified. It is usually in association with a lymph node which may obscure the view. Unless care is taken, the vessel may be torn or mistaken for a fibrous band and cut. This can be avoided by ligating the cystic artery soon after its exposure and severing it close to the gallbladder. This permits greater mobility of the neck and cystic duct with less risk of hemorrhage and a better view of the larger ducts.

The cystic artery or arteries may arise from any branch of the celiac axis of the aorta, the superior mesenteric artery, or the aorta itself. While the cystic artery comes most often from the right hepatic artery, its origin from a large vessel at some distance from the gallbladder may subject it to injury during the act of retraction of the viscera adjacent to the gallbladder. This further emphasizes the need for care in the initial phase of cholecystectomy when the viscera are exposed and the field is opened to view. Medial and inferior displacement of the duodenum with retraction by a hand or instrument may compress a torn vessel arising from the superior mesenteric artery and prevent bleeding. After the retractor is removed, the operative field may fill with blood and prolong the procedure, or bleeding may follow closure of the abdominal wall in the early postoperative period and result in shock.

There is a particular danger when a vessel is cut or torn, and retracts out of view in the field.

The accumulation of blood obscures ducts and vessels, and an impulsive application of a forceps in this field in an effort to control bleeding is a frequent cause of injury to these structures.

By inserting the left index finger into the foramen of Winslow, the hepatic artery can be compressed with the left thumb in the many patients whose structural arrangement permits this to be done (Fig. 3). The blood can now be aspirated and the field irrigated with isotonic salt solution. Removal of this fluid by suction clears the field. The surgeon can then see the extent of injury and secure the bleeding point.

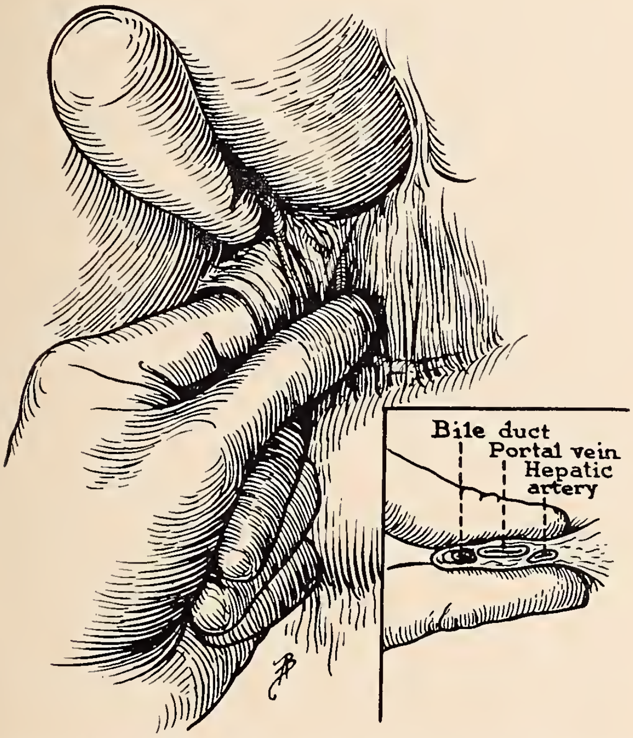

Fig. 3. Method for the control of bleeding from a branch of the hepatic artery when this vessel lies in the free edge of the lesser omentum.

The ducts. The length of the cystic duct varies considerably. The extremely short ones are less than a centimeter in length and favor injury to the hepatic and common ducts. The mildest traction on a gallbladder with a short duct favors "tenting" of the other ducts, so that the application of a clamp occludes more than the cystic duct. Other cystic ducts are as long as the gallbladder itself. Frequently a long cystic duct and the hepatic duct lie side by side for one, several, or many centimeters before they unite to form a common duct. It is less hazardous for the patient to have the contiguous portion of the cystic duct remain, for complete excision of a cystic duct attached to the hepatic duct may be more injurious to the long hepatic duct, duodenum, or pancreas.

It is better to avoid clamping the cytic duct in almost all instances. The duct can be exposed more readily with careful, blunt dissection, using a fine tipped Mixter forceps or any of its modifications, and applying a ligature directly to the cystic duct at right angles to its axis in full view of the common and hepatic ducts.

The cystic duct usually has the narrowest caliber of all the extrahepatic ducts, and its surface is "corrugated" or irregular because of small, leaf-like projections within its lumen that extend in a spiral throughout short ducts. These are the valves of Heister, an embryologic formation usually not found in the distal end of long cystic ducts. These characteristics of the cystic duct are useful in establishing its identity on sight.

Variations in the mode of union of the hepatic with the cystic duct to form the common duct, the occasional union of the cystic with the right hepatic duct, and the right hepatic duct's rare entrance into the gallbladder warrant careful inspection before any duct is ligated and cut.

The location of the hepatic duct is constant. It lies at the bottom of the quadrate lobe of the

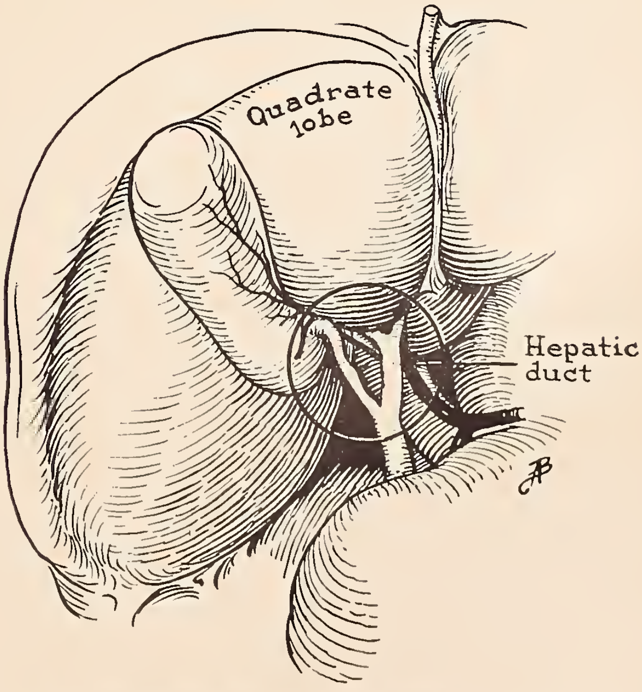

Fig. 4. Quadrate lobe and location of hepatic duct. In 88 per cent of patients, the duct emerges from the posterior extremity of the quadrate lobe. In 12 per cent, ducts emerge along margin of the lobe, sometimes close to the fossa of the gallbladder (Anson).

liver. This lobe is bounded by the gallbladder fossa on the right, the round ligament on the left, the anterior margin of the liver superiorly, and the hilus, where the larger vessels enter and the hepatic ducts leave the liver. If this fact were more generally known, serious injuries to the hepatic duct could be avoided. The duct lies behind a layer of peritoneum. The thickness of this peritoneal layer varies with the degree of chronic peritonitis associated with the biliary tract disease. Immediate exposure of the quadrate lobe by traction on the round ligament toward the left and displacement of the body of the emptied gallbladder to the right help to visualize the danger zone in biliary tract surgery (Fig. 4).

Pathologic factors determine the need for exploration of the common duct. Indications are:

1. Palpable stone or stones.
2. Dilated duct – distal obstruction.
3. History of jaundice, or chills and fever.
4. Thickened duct (chronic cholangitis).
5. Contracted gallbladder (stones already evacuated into common duct).
6. Large caliber cystic duct with many stones and biliary "mud" in the gallbladder (stones and "mud" in the common duct, too).
7. Palpable tumor in the duodenum at the ampulla (duodenotomy indicated).
8. Gastric surgery – duodenal lesion encroaching on the common duct.
9. Chronic pancreatitis – stricture or compression of the common duct at the ampulla or in the intrapancreatic portion.
10. Postcholecystectomy. Cholangitis, pancreatitis, hepatitis, biliary cirrhosis, jaundice (in the absence of other causes for the clinical symptoms and findings), persistent biliary fistula, persistent epigastric pain, weight loss with or without chills, fever, or jaundice.

As a safeguard in exploration, aspiration of bile is an assurance that the portal vein has not been mistaken for the duct. Mobilization of the duodenum by incision of the parietal peritoneum on its lateral margin and caudad displacement of the hepatic flexure of the colon facilitate manipulation necessary to explore the duct, expose the ampulla of Vater, or repair injured ducts.

Aberrant ducts are occasionally seen and, when not involved in the removal of the gallbladder, should remain undisturbed. More often, they are not recognized and may be injured during cholecystectomy. Fortunately, few of the ducts drain sufficient bile to cause serious postoperative complications. However, they account for some cases of bile peritonitis.

Abdominal "drainage". Bile leaking from the wound after surgery may be caused by injury to an accessory duct rather than to improper ligation of the cystic duct. This can occur even in the simplest case when the liver is partially rotated out of the abdomen and a short accessory duct is torn off. The hazard of injury to an accessory duct without knowledge that it has been torn or evulsed is present in every case.

Some of these ducts are narrow in caliber and may be injured during cholecystectomy. Subsequently, a large amount of bile may accumulate in the subphrenic or subhepatic spaces.

Careful closure of the gallbladder bed in the liver by suture of the "flaps" of the serosa and the subserosa in the liver bed helps to occlude vessels and ducts in this raw surface and assures a dry field.

Some surgeons of wide experience and good judgment do not use drains as routine practice after cholecystectomy, and state that they have no cause to regret this omission. However, many others are convinced that it is better to insert a drain and risk a useless application with a good result than to omit it and risk a subphrenic accumulation of bile, blood, or peritoneal fluid.

A drain should not be a substitute for careful surgery. Hemostasis, the closure of openings in ducts, and the suture of leaking bile channels lying in the gallbladder bed of the liver prevent the accumulation of blood and bile in the subhepatic space. A hernia practically never results when the drain leaves through a stab wound on the right side below the costal margin.

Abdominal wall closure. A common hazard in gallbladder surgery is the development of a postoperative incisional hernia. This may be due to faulty healing from one or several of a variety of causes or to malocclusion of the layers of the abdominal wall. While the causes of faulty healing are well known and can be guarded against by proper nutrition, prevention of infection, and avoidance of distracting forces on the suture line, the anatomic factor of complete and accurate closure of the posterior sheath of the rectus muscle with its transversus muscle, transversalis fascia, and attached peritoneum needs constant emphasis (Fig. 5). Failure to suture accurately this important layer is frequently the fault of inadequate abdominal wall relaxation.

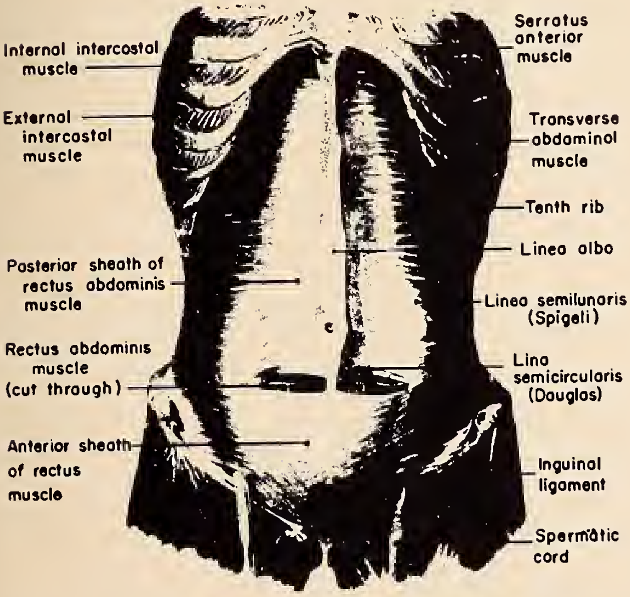
Internal intercostal muscle
External intercostal muscle
Posterior sheath of rectus abdominis muscle
Rectus abdominis muscle (cut through)
Anterior sheath of rectus muscle
Serratus anterior muscle
Transverse abdominal muscle
Tenth rib
Linea alba
Linea semilunaris (Spigeli)
Lina semicircularis (Douglas)
Inguinal ligament
Spermatic cord

Fig. 5. The transversus muscle and the posterior sheath of the rectus muscle. Failure to suture securely this layer is responsible for postoperative herniation. Muscular relaxation is necessary to approximate the cut edges, since muscle contraction draws the lateral cut edge behind the rectus muscle and prevents approximation of the cut edges.

In some instances when the abdominal wall is thin, the transverse parallel fibers of the transversus muscle and its aponeurosis split apart during closure of this layer. This defective closure may be avoided by correct placement of the closing suture. A lock stitch pulled snugly at right angles to the transverse parallel fibers, while the edges of the wound are pushed toward the suture, will approximate bundles of fibers and maintain a snug closure.

Attention to the details of closure is well worth whatever additional time is required to restore the integrity of the abdominal wall. Suture materials should hold the tissues in approximation until healing is well established. Nonabsorbable sutures for fascial closures are best.

Anesthesia in an amount sufficient to relax the abdominal musculature is needed, and closure of the incised wound should not be attempted until this is established. At this stage, some anesthetists use muscle-relaxing agents to facilitate the closure. These agents are useful, but the hazard of decreased respiratory excursion and anoxia warrants constant vigilance to be sure that the patient can breathe well in the immediate postoperative period. A clear airway, with adequate oxygenation of the blood by artificial pulmonary ventilation, is a requirement until the patient regains control of respiration and is out of danger.

Summary

Surgery of the biliary passages has attained a high state of refinement. Results are excellent in most patients with biliary tract disease.

Hazards in surgery of the biliary tract are present from the moment the initial incision is made until the last suture is placed. Pathologic changes and variations in anatomy contribute to these dangers. The location and size of the abdominal wall incision are factors that determine the ease with which surgery on the biliary passages may be accomplished. The importance of abdominal exploration to determine the presence of coincidental pathologic conditions is emphasized. In a well-exposed and illuminated field, all structures may be visualized and the risk of injury to vessels and ducts is minimized. The importance of the quadrate lobe is emphasized.

There is no substitute for care and skill. It is better to take time to perform the operation well than to hurry and risk an accident. Secure closure of the abdominal wall to prevent herniation is an essential part of the procedure.

"Postcholecystectomy syndrome" includes a variety of conditions that have been specifically described. It is not an entity, and should not be referred to as such in the surgical literature.

◆

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severe bruises
. . . swelling
. . . cleared
by fifth day[2]

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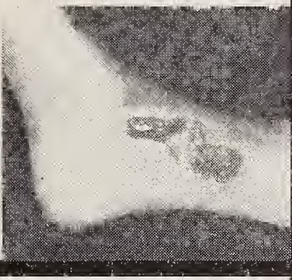
ULCER**

15 years duration
. . . resolved with
VARIDASE[1]

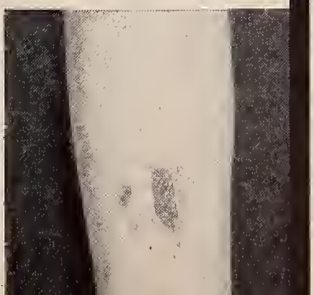


**INFLAMMATORY
DERMATOSIS**

rapidly spreading
rhus dermatitis
healed within
a week[1]

**INFECTED
LACERATION**

marked reversal
in 3 days . . .
returned
to school . . .
closure advanced[1]



THROMBOPHLEBITIS

back on his feet
in a week after
recurrent episode[1]

**REFRACTORY
CELLULITIS**

normal routine
resumed after 4 days
of VARIDASE[1]

Radical Mastectomy in the Treatment of Cancer of the Breast

Miguel Castellanos, M.D.
and
Jose Guerrero Santos, M.D.

OVER 50 YEARS ago, Halstedt defined the surgical principles for the proper resection of breast malignancies in the early stages. These principles were based on the resection of the affected organ, its primary lymphatic vessels, and the regional lymph nodes in the axilla. Thousands of patients have been cured when this approach has been implemented at the proper time. Cancer of the breast can be 90 per cent curable by radical mastectomy in its early stages. However, this figure decreases rapidly when the surgical procedure is delayed until after the malignancy has metastasized to the regional lymph nodes. Sugarbaker and Urban proved clinically and histologically that often the primary tumor spreads first along the internal mammary chain particularly when the lesion is located in the areolar margin or in the inner portions of the breast. These workers also showed that out of every 100 cases in which metastases were found in the axilla, at least 30 showed metastases in the internal mammary chain as well. Therefore, the key to the effective treatment of breast malignancies would lie in some technique by which the breast, the lymphatic channels and nodes of the axilla as well as those of the internal mammary chain could be resected "en bloc."

Many techniques have been devised and tried in more or less large numbers of patients. In the Tumor Clinic at Guadalajara we considered Dr. Urban's technique as the most reasonable and logical one. For the past two years, we have tried it on six cases and in this report we give our own conclusions as to its practicability, and complications encountered. We shall not attempt to make a long term appraisal of this method, because we have not managed enough cases, and our experience is relatively very short.

In principle, the technique consists in performing a radical mastectomy after sectioning the tendons of the pectoralis major and minor at their insertions. After cleaning the axilla, the lateral cutaneous flaps of the mammary tissue are separated and then the thorax is opened through the first and fifth intercostal spaces, ligating the internal mammary vessels at this level. The lung, the mediastinum, and the internal mammary chain are then explored. The presence of metastases in any of these structures precludes radical surgery and the patient is considered incurable. A simple mastectomy is done as a palliative procedure, and to facilitate postoperative radiation.

In those cases in which we strongly suspect metastases, we proceed to open the thorax first and if pulmonary metastases are encountered, as is often the case, any contemplated radical procedure is immediately abandoned. If the case is considered suitable for ligation of the internal mammary vessels, a sternotomy is performed with a Lebschke knife joining the first and the fifth intercostal spaces. Bleeding from the sternum is controlled with bone wax, then the cartilaginous portions of the second and fifth ribs are cut and the breast, the associated tissues of the axilla, the pectoralis major and minor, the internal mammary chain as well as the sternum and the costal cartilages are all resected "en masse."

The defect left by the resection of the sternum is covered with a piece of fascia lata which is obtained by a surgical team working on the patient as soon as the radical approach is decided upon.

Complications

The six cases treated at our clinic by this technique have tolerated the procedure well, and the immediate postoperative course has been uneventful. We have cut down the operative time to between two-and-a-half to three hours. Between 500 and 1000 cc. of whole blood have been needed in each case. The length of the hospitalization period in these cases has been longer than in those treated by the conventional radical mastectomy because the underlying circulation available to the skin flap covering the defect left on the sternal area is obstructed by the presence of an avascular tissue like the fascia lata. Necrosis and ulcerations are wont to occur and prolong the recovery period and the hospital stay. However, this is not a serious complication in spite of the psychological trauma to the patient. Local treatment of the ulcerated areas is usually sufficient to handle these cases.

Conclusions

(1). The technique described offers definite advantages and is the procedure of choice in handling cases of malignancies located in the areolar zone or in the inner quadrants of the breast tissue. It should be done in all patients whose general condition is otherwise good.

(2). Complications in this type of surgery are minimal and present no major hazard to the life of the patient.

(3). In those institutions in the United States where this technique has been used, there is a considerable amount of enthusiasm with the realization that it is much too early to make a just appraisal of the method.

Summary

Advances in anesthesiology, blood transfusion, and antibiotic therapy have made possible more extensive radical surgery in cancer in a way which, up to now, has been unexpected.

The "en bloc" resection of the diseased organ, the lymphatic channels, and the axillary and internal mammary nodes have been shown by Urban and others to be feasible with few complications and a low mortality rate in the treatment of cancer of the breast.

At the Cancer Clinic of Guadalajara we have used Urban's technique in six cases of breast cancer.

We have been impressed by the low incidence of complications in the postoperative period in spite of the extensive surgery performed. Even with our very limited experience we feel there is a place for this type of surgery, particularly in those tumors in the medial quadrants of the breast.

Mastectomia Radical Con Vaciamiento De Mamaria Interna En El Tratamiento Del Cancer Del Seno

Dr. Miguel Castellanos
Dr. Jose' Guerrero Santos

Hace más de 50 años, que Halstedt estableció los principios quirúrgicos para la correcta extirpación del Cáncer Mamario en sus primeros estadiós evolutivos. Estos principios tomaban como base, la extirpación en bloque del órgano invadido, de las vias linfáticas primarias y de la estación linfáctica axilar. Muchos miles de enfermos han sido curados cuando a tiempo se les ha aplicado correctamente esta técnica quirúrgica. En el primer estadío clínico evolutivo del Cáncer Mamario, la curabilidad por medio de la intervención quirúrgica a grado de que si en este porcentaje de curabilidad disminuye rápidamente mientras mas tardía sea la aplicación de la intervención quirúrgica a grado de que si en el examen Histopathológico de la pieza extirpada se encuentran metátasis malignas ganglioanares de la lesión mamaria, la curabilidad disminuye al 50% después de 5 años. Después de los cuidadosos estudios Histopatológicos y clínicos hechos por Sugarbaker y Urban, se ha llegado a la conclusión que en muchas ocasiones, las metástasis del tumor primerio no son de inmediato en la axila, sino que un cierto número de tumores, tienen tendencia a invadir primeramente la cadena ganglionar de la mamaria interna, muy en especial aquellos tumores situados en la parte mal del seno, en los límites de la areola o bien, en los cuadrantes internos de la mama. Así mismo estos estudios revelaron que de cada 100 casos que ya presentaron metástasis en la axila, cuando menos 30 las presentaron también en la cadena mamaria interna. En consecuencia, el paso siguiente consistió en formar una técnica en

la que pudieran ser extirpados en bloque, el órgano invadido, las vías linfatícos de la axila y de la mamaria interna y las cadenas ganglionares linfáticas de la axila y de la mamaria interna.

Muchas técnicas han sido ideadas y estudiadas en series mas o menos grandes de enfermos. En la Clínica de Cáncer de Guadalajara, al considerar este problema, nos impresionó como la más lógica y razonable, la técnica ideada y practicada por el Dr. James Urban. Desde hace 2 años, an la Clínica de Cáncer hemos practicado esta técnica en 6 enfermos y el presente reporte se refiere a nuestras impresiones sobre la practicabilidad de la misma y las complicaciones que hemos encontrado. En lo que se refiere a resultados, consideramos ser nuestra experiencia tan pequeña y el tiempo de observación tan corto, que nos abstendremos de presentarlos ante Uds.

En principio, la técnica consiste en practicar una mastectomía radical que debe iniciarse con el tiempo del vaciamiento axilar, previa sección de los tendones de inserción, de losmúsculos pectorales mayor y menor. Una vez hecha la limpieza axilar, se procede a separar los colgajos cutaneos laterales del tejido mamario y enseguida se entra al tórax a través del 1° y 5° espacios intercostales, haciendo una ligadura a este nivel de los vasos mamarios internos. Enseguida se explora el pulmón, el mediastino y la cadena mamaria interna. La presencia de metátasis pulmonares en cualquiera de estas estructuras, contra indica la cirugía radical en cualquiera de las formas y en tal caso se considera el páciente incurable y en forma paliativa se practica una mastectomía simple para facilitar la radiación postoperatoria.

En algunos casos en que sospechamos la presencia de metástasis, se abre el tórax como el primer paso y tenemos varias observaciones en que esto ha sido de gran utilidad, pues de inmediato se encuentra una metástasis pulmonar que contra indica cualquier procedimiento radical. Si se considera el caso adecuado para el vaciamiento de la mamaria interna, se procede a practicar una esternotomia por medio de cuchillo de Lebschke, uniendo el primero con el 50 espacios intercostales. La hemorragia del esternón, se cohibe con cera de huesos y se procede luego a seccionar los cartílagos costales del 2° y 5°, ex tirpando en masa la mama, el tejido celular de la axila, los músculos pectorales mayor y menor y la cadena mamaria interna, junto con el esternon y cartílagos costales.

El defecto ocasionado por extirpación del esternon y cartílagos costales, es reparado por medio de fascia lata, previamente extraída a la paciente por un Team quirúrgico que empieza a trabajar en ésto, desde el momento en que se acepta en definitiva el tratamiento radical.

Complicaciones

Los 6 enfermos que hemos intervenido con esta técnica, han tolerado el precedimiento perfectamente bien en el post-operatorio immediato. El tiempo operatorio hemos logrado estabilizarlo entre 2½ y 3 horas. La administración de sangre varía entre 500 y 1,000 c.c. El tiempo de hospitalización post-operatoria ha sido mas larga en estos enfermos que en los de mastectomía radical por el problema del colgajo cutáneo central, que al encontrarse en contacto con un tejido avascular injertado como es la fascia lata, dificulta su nutrición y se presenta con cierta frecuencia la necrosis de esta porción de la piel. Ha sido esta la única complicación seria que si no amenaza en lo más mínimo la vida del infermo, prolonga la convalescencia por la zona de ulceración que atemoriza al enfermo y le impide dejar el Hospital. Sin embargo esta complicación se ha resuelto exclusivamente con curaciones locales dado que los 3 casos en que se ha presentado han cedido espontaneamente sin necesidad de injertos posteriores.

Conclusiones

(1). La técnica de que hablamos presenta ventajas indiscutibles, para aquellos casos de tumores localizados en la zona de la areola a los cuadrantes internos de la mama y creemos que debiera intentarse rutinariamente en aquellos enfermos en buen estado general, que presentan este tipo de lesiones.

(2). Las complicaciones de este tipo de Cirugía son mínimas y no presentan mayores riesgos para la vida del paciente.

(3). En las Clínicas Norteamericanas en donde se utiliza este procedimiento en forma rutinaria en gran número de casos existe gran entusiasmo por sus resultados aún reconociendo que se encuentra en período experimental y que pasarán varios años y muchos cientos de enfermos tratados en esta forma, antes de que podamos saber su verdadero valor en el tratamiento del cáncer mamario.

Post Coarctation Hypertension and Arteritis: Its Possible Etiology

REPORT OF TWO CASES

Earl J. Baker, M.D.

Phoenix, Arizona

From the Thoracic Surgery Services of The St. Joseph's Hospital
and
The Crippled Children's Hospital, Phoenix, Arizona

THE syndrome of post coarctation arteritis was first reported by Sealy in 1953(1). Since that time, at least five deaths have been ascribed to this condition,(1, 2, 3, 4) three secondary to intestinal gangrene, and two due to hemorrhage. This study is a report of two cases and a comment on the physiopathology and possible etiology of this disease.

Report of Cases

Case 1. K. G. a 15 year old white male, was admitted to St. Joseph's Hospital for repair of coarctation of the aorta. Symptoms included bilateral frontal headaches of five years duration, and leg muscle cramps of one year duration. On auscultation, the brachial artery pressure was 215/105 mg. Hg., and on direct tracing, the femoral artery pressure was 90/70 mm. Hg., mean of 80. No physical evidence of collateral circulation was present. Chest x-ray revealed an enlarged left ventricle with absence of rib notching. Electrocardiographic report was left ventricular hypertrophy. On Dec. 8, 1957 a coarctation of the aorta was resected and the aorta repaired by an end to end anastamosis. Trimethaphan Camphor Sulfonate* and hypothermia to 91°F. were employed as adjuncts to the procedure. The immediate post operative course was complicated by atelectasis of the left upper lung. The brachial artery blood pressure on the first post-operative day was 90/70 and on the second day, 110/68. (Fig. 1) On the third post-operative day, the brachial artery pressure was 170/110 and the femoral artery pressure was 210/120. A leukocytosis of 25,900 and a fever of 102°F. were ascribed to the atelectasis. On the fifth post-operative day, the white blood count was 13,750 and the temperature was 101°F. with a concomitant resolution of the atelectasis. However, the onset of cramping mid-epigastric pain, accompanied by abdominal distention was noted. Increased peristalsis was present, and nausea and vomiting were subsequently observed. On the sixth post-operative day, the white blood count was 17,300. On the seventh post-operative day, roentgenologic study revealed gastric and small bowel distention with massive edema of the intestinal wall. (Fig. 2) A diagnosis of post corarctation arteritis was made. Intravenous Rauwolfa Serpentina†, 0.5 mgms. every four hours was administered and naso-

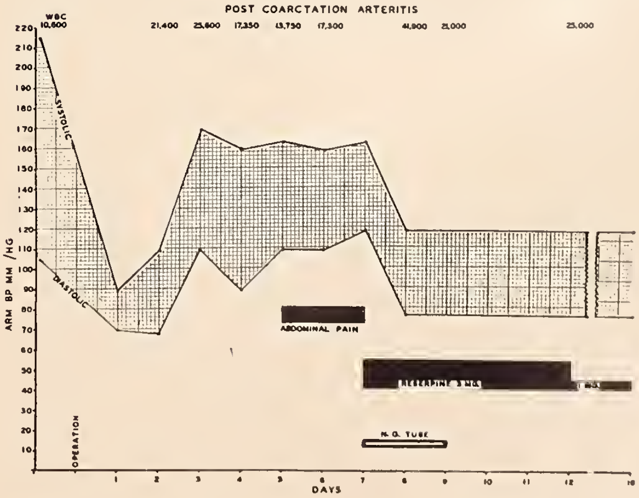


Fig. 1. Case K. G. Severe post coarctation arteritis.

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*Roche (Arfonad).
†Ciba (Reserpine).
Direct Tracing data obtained by Dr. Hugh Hull, Director, Cardiopulmonary Laboratory, St. Luke's Hospital.

gastric intubation was instituted. On the eighth post-operative day, the white blood count was 41,900. Abdominal pain ceased on the ninth post-operative day, after which the intestinal tube was removed. A gradual reduction in brachial artery pressure was noted and on the 12th post-operative day, the dosage of Reserpine was reduced to 0.25 mg. every six hours. On discharge, 16 days following surgery, brachial artery pressure was 140/85. However, femoral artery pressure remained 200/110. Reserpine was administered orally for one month following discharge. On examination, two months after surgery, the left brachial artery pressure was 130/100 and the patient was without complaint.

Case 2. B. P., a six year old white male, was admitted to the Crippled Children's Hospital for a repair of an aortic coarctation. Symptoms included headache and recurrent asthmatic bronchitis. At age five, malgrowth of incisor teeth had required an extraction. On direct tracing, the brachial artery pressure was 140/60 mm. Hg., mean of 98, and the femoral artery pressure was 86/70 mm. Hg., mean of 78. On physical examination the lower portion of the body was poorly developed and there was no evidence of collateral circulation. The molar teeth were strikingly enlarged, being almost adult in size. Chest x-ray revealed enlargement of the left ventricle with absence of rib notching. Electrocardiogram was interpreted to show minimal right ventricular hypertrophy. On Aug. 5, 1959 the coarctation was excised and an interrupted suture repair performed. A small patent ductus was present and divided. At the end of surgery emesis occurred, and a naso-gastric tube was inserted. The brachial artery pressure on the first post-operative day was 120/88. (Fig. 3) On the second post-operative day the brachial artery pressure was 135/95 and the femoral artery pressure 150/85. Abdominal distention was noted despite Wangensteen suction. Active peristalsis with passage of flatus was present. Roentgenologic study devealed gastric and small bowel distention with edema of the intestinal wall. (Fig. 4) Post coarctation arteritis was diagnosed and it was decided to withhold oral feeding and intensify naso-gastric suction. Gastroin-

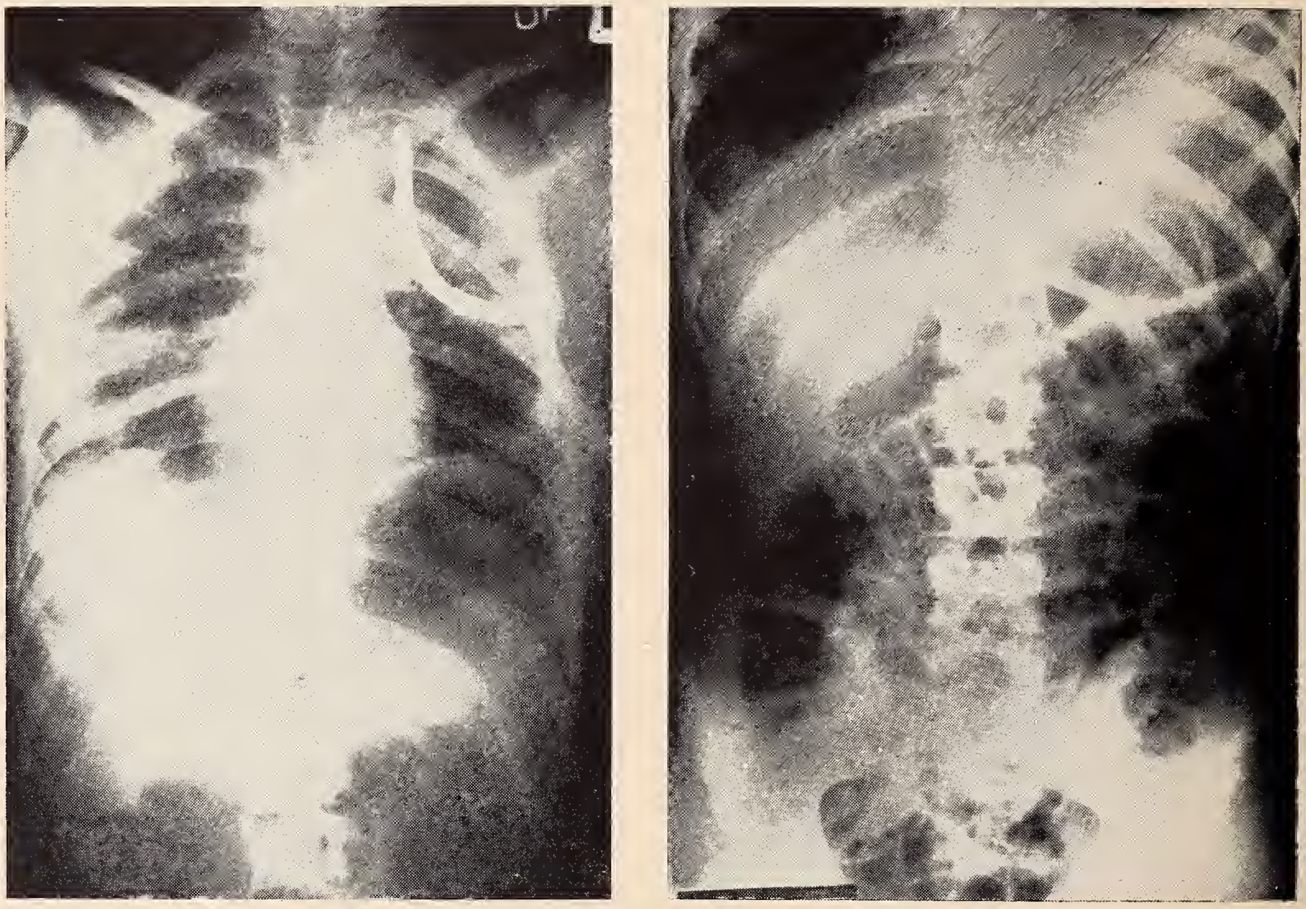

Fig. 2. Case K. G. Gastrointestinal distension with intestinal edema.

testinal symptoms continued for 48 hours, but by the fifth post-operative day, brachial artery pressure was 130/80, white blood count was 11,200 and the gastric tube was removed. On the 17th post-operative day, the brachial artery pressure was 110/70. Moderate abdominal distention was still present, being more pronounced in the latter part of the day with almost complete recession during the night. Elimination remained normal and abdominal distention finally disappeared one month after surgery.

Comment

Possible theories as to the etiology of this syndrome have included: Stimulation of the adrenal medulla due to sudden increase in local blood supply(5), occurrence of periarteritis nodosa due to a hypersensitivity reaction(2), and finally, general vascular spasm in response to sudden exposure of the distal arterial system to a high intravascular tension(2, 5). This latter theory is logical, but does not explain the limitation of the arteritis to a small percentage of post-operative coarctation patients. A difference in the size of the tunica media of the aorta, in that it is relatively thicker proximal to a coarctation than it is distal to it(6), has recently been confirmed by Heath and Edwards(7). In a previously unpublished study, inactivity induced degenerative changes in the tunica elastica of the pulmonary artery distal to a valvular stenosis in the tetralogy of Fallot had been noted(7). However, in the study of coarctation tissues by Heath and Edwards, a relatively normal tunica elastica was present in the distal aorta. When measured, the absolute femoral pressures in this series also approached normal. In the usual coarctation, because of the presence of a relatively high femoral diastolic pressure(8), the absolute blood pressure in the aorta distal to the involved area approaches normal(7). Accordingly, Heath and Edwards stated that structural changes in the tunica elastica would not usually be expected. However, they also state that examples of structural degeneration of the tunica elastica might be observed if a relatively low mean blood pressure were present in the distal aorta. Here "inactivity induced changes in the elastic tissue of the media" could occur secondary to the lowered vascular tension.

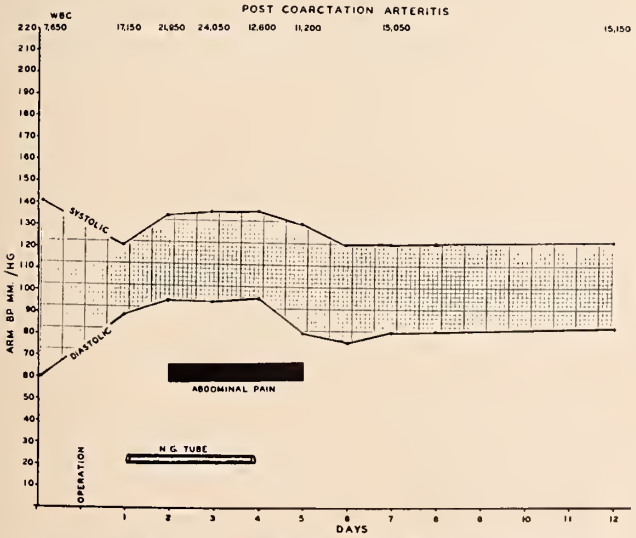

Fig. 3. Case B. P. Moderate arteritis, low pre-operative diastolic blood pressure secondary to associated patent ductus.

This excellent pathological study by Heath and Edwards(7), suggested a possible explanation for the occurrence of arteritis in a limited percentage of post-operative coarctation patients. When a relatively normal, absolute femoral pressure is present, probably related to either a moderate type coarctation, or to an excellent collateral circulation, an adequate tunica media and elastica should be present in the distal aorta and the hemodynamic changes secondary to removal of the coarctation would be well tolerated. Contrariwise, when a high brachial femoral absolute pressure difference with a low absolute femoral pressure is present, probably related to either an extreme coarctation or to moderate type coarctation with minimal collateral circulation, a thinner tunica media with a degenerative type tunica elastica may occur. The hemodynamic changes secondary to surgery may then be less well tolerated. Reflex arterial spasm could develop with generalized hypertension, systolic and diastolic in nature, progressing to a distal arteritis. Ischemia, particularly severe in the anatomically unsupported mesenteric vasculature, might occur, and, if untreated, terminate in intestinal gangrene. Support of this theory may be present in the two presently reviewed patients in whom a difference of 51 mm. Hg. average in the brachial and femoral, pre-operative absolute blood pressure was present, and no collateral circulation was observed. In four normal subjects studied by Brown(8), using a strain gauge manometer, the average brachial-femoral absolute pressure difference was 0 mm. Hg. A comparison of this normal difference with four patients reported by

Sealy(5) to show severe "late" arteritis may further support the present theory of etiology. The average pre-operative brachial-femoral absolute pressure difference in the "severe" group was 49 mm. Hg. These measurements were derived from separate brachial and femoral pressures listed by Sealy and exclude two patients in the "severe" group where diastolic femoral pressure was unobtainable. However, inclusion of these two patients would further elevate the absolute difference in the "severe" group. Finally, in case mortalities of this syndrome submitted to autopsy, necrosis of the arterial media, restricted to vessels distal to the anastomosis has been a prominent factor(4).

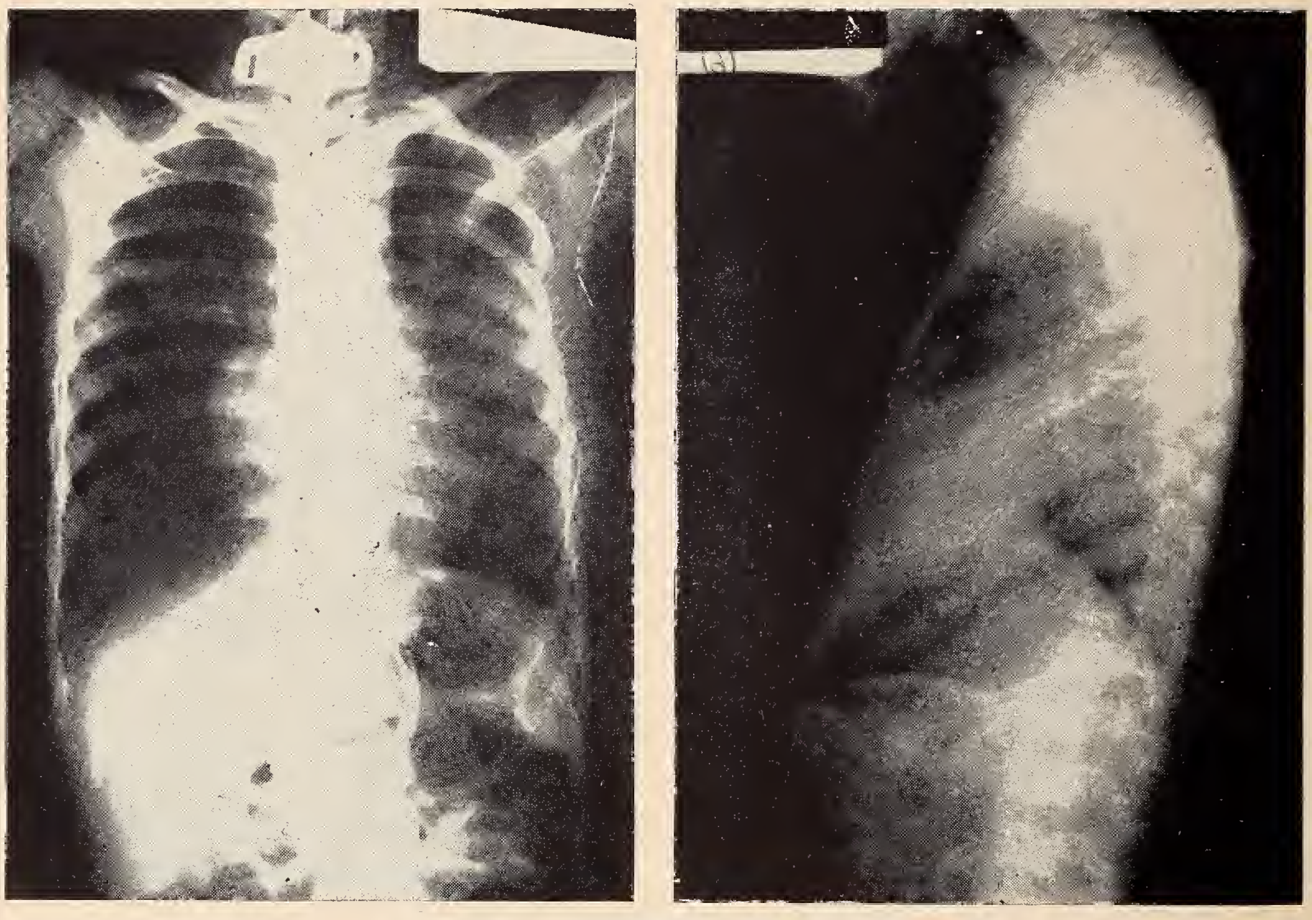

Fig. 4. Case B. P. Gastrointestinal distension with intestinal edema despite naso-gastric decompression.

Careful Evaluation Important

Anatomical confirmation of this theory is necessary, but in the interim it would be expedient to evaluate carefully all candidates for surgical correction of coarctation of the aorta for objective evidence of an adequate distal arterial system. This should include direct tracing of brachial artery and femoral artery blood pressures with careful observation of the mean brachial-femoral difference. If this were found to be high, in conjunction with minimal or absent collateral circulation, and in particular with absence of notching of the ribs in older children and adults, it would be expedient to observe carefully for the post-operative development of this deleterious syndrome and combine pre-operative intestinal sterilization with early post-operative use of anti-hypertensive drugs.

The syndrome itself seems to vary in its severity. This may be ascribed to individual patient variance in the mean arterial pressure proximal and distal to the coarctation. The more severe or malignant type of post coarctation arteritis may be anticipated in a male(9) patient in whom a marked pre-operative disparity between the brachial and femoral diastolic or mean blood pressure has been recorded and in whom, in addition, evidence of collateral circulation is minimal or absent. The syndrome would be initiated on about the third post-operative day by a rise in the brachial and femoral systolic and, in particular, diastolic arterial pressures. This would be followed in 24 to 48 hours by intermittent mid-epigastric pain accompanied by active peristalsis with frequent flatus. At about this time, a progressive leukocytosis with low fever would be recorded. Roentgenologic study of the abdomen would reveal intestinal distention and edema. Untreated, and in its more malignant form, this syndrome then may progress to necrosis of the intestine, particularly the small bowel, or possibly cause rupture of the anastomotic suture line or a vessel distal to the previous coarctation. If treated, in its milder aspect by intestinal intubation and antibiotics, or in its more malignant form by the addition of antihypertensive agents, such as Reserpine, a complete remission would be expected. However, progressive leukocytosis and pain with persistent abdominal distention might necessitate a laparotomy for excision of compromised bowel.

Summary

The seriousness of the post-coarctation arteritis syndrome is noted. Report is made of two cases in which treatment was successful. A theory as to the physiopathological development of this syndrome is postulated. The clinical and laboratory findings of possible value in prognosticating the occurrence of the more malignant type of this syndrome are outlined, and the clinical syndrome and its accepted treatment are reviewed.

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NEW ANTIBIOTIC TREATS ENTERIC INFECTIONS

Experimental studies of paromomycin, a new antibiotic of streptomyces origin, were reported by Fisher *et al.*, of Parke, Davis & Company. They found that it inhibits a wide variety of bacteria in vitro, being notably active against proteus but relatively weak against pseudomonas. A tuberculostatic effect was reported in guinea pigs. Cross-resistance was observed with kanamycin, neomycin, and, variably, with streptomycin.

Courtney and Thompson, of Parke, Davis & Company, pointed out that paromomycin is not absorbed from the gut but that it is a potent nontoxic amebicidal agent. In therapeutic trials in fourteen hundred patients, the authors found that paromomycin is well tolerated and is effective against chronic and acute intestinal amebiasis and some types of bacterial enteritis.

(from Seventh Annual Antibiotic Symposium,
Nov. 4-6, 1959, Washington, D. C.)

DERMATOLOGISTS PRAISE GRISEOFULVIN

The new fungistatic antibiotic, griseofulvin, was described as "a major advance" in the treatment of superficial mycoses. Among the enthusiastic comments on this new agent was the observation that griseofulvin now makes X-ray treatment of tinea capitis obsolete. It was emphasized, however, that griseofulvin is effective only against fungi of the trichophyton, microsporum, and epidermophyton groups.

Stressing the importance of positive laboratory identification, one investigator pointed out that "all ringlike lesions are not ringworm, and not all ringworm produces ringlike lesions." Dosages used by reporting investigators averaged 1 Gm. daily. Length of treatment ranged from four to sixteen weeks, depending on the type of skin involved. Nail infections required up to twenty-four weeks of therapy.

(from Seventh Annual Antibiotic Symposium,
Nov. 4-6, 1959, Washington, D.C.)

"Every three and one-half days we live on earth, we get enough whole body (and hence also gonadal) radiation to equal that from a single 14" x 17" X-ray, which is on the order of .0012 r ,male)."

Dr. Robert G. Zach and Mr. David S. Goodman

Coccidioidomycosis in Animals

Dr. Raymond E. Reed, D.V.M.

Professor of Animal Pathology
University of Arizona, Tucson

The following abstract concerning "A Study of Coccidioidomycosis in Animals" was furnished by Doctor Raymond E. Reed, D.V.M., professor of animal pathology at the University of Arizona, Tucson. This project is one of the many being pursued at the university and having a direct bearing on basic problems of medical interest. We are grateful to Doctor Reed for this abstract and hope he will keep us informed of future developments in this project.

A. J. B.

SINCE the discovery of coccidioidomycosis, its laboratory diagnosis has included inoculation of susceptible animals. Natural infection of many species has been observed and reported from time to time in various periodicals, the papers usually reflecting interest generated by chance encounter of coccidioidal lesions in slaughter animals or necropsy specimens. In recent years, the tempo of discovery and the number of animals involved has increased, making it obvious that the disease is far from rare in several mammals other than man.

"A Study of Coccidioidomycosis in Animals" is a project initiated in 1952 by the Department of Animal Pathology of the University of Arizona. It is supported by State Research funds along with a grant-in-aid from the National Institutes of Health, U. S. Public Health Service. The original objectives of the project were to develop methods for recognizing the disease clinically in dogs, to evaluate methods for confirming diagnosis short of necropsy, and to determine the pathogenicity of coccidioidomycosis for cattle. These broad objectives have been achieved for the most part, but new questions have grown from findings, and they have been kept in the outline.

A start toward antemortem recognition of canine coccidioidomycosis had been made by a few Tucson veterinarians before work began on the project. Dogs with chronic respiratory disease marked by coughing and fever frequently failed to respond when treated with various antibiotics or sulfonamide drugs. After euthanasia and necropsy, many such dogs were found to have coccidioidal granulomas in lungs and bronchial lymph nodes. Careful study of hospital records kept on over 100 confirmed cases of canine coccidioidomycosis provided a complete and varied picture of the severe phases of the disease. It was found that infected dogs were sensitive to coccidioidin if used undiluted, and that complement fixation titers could be determined, and had about the same significance noted in the human disease. Climbing titers occurred in progressive infections, while static or declining titers were found when the dog was holding his own or recovering. Precipitins appeared in serums from some dogs, but not predictably. Dense shadows at the hila of the lungs represented graulomatous and indurated bronchial lymph nodes and served as good indications of the nature of the respiratory difficulty. As information accumulated and the various diagnostic techniques were employed, the diverse manifestations of progressive cocciodioidomycosis were recognized. Veterinarians in

Arizona, between 40 and 50 per cent of whom respond each month by filling out an animal disease morbidity card, now report over 200 cases of progressive canine coccidioidomycosis a year. Differentiation of primary coccidioidal infection from other canine respiratory diseases is being made with less and less difficulty.

Observations

For approximately a year, work on the project included an attempt, with a physician and a pathologist, to reproduce in the dog the fan-shaped pulmonary lesion seen radiographically in about one-third of human primary infections. Ten dogs inoculated by intratracheal insufflation with coccidioides spores failed to develop this type of lesion, as indicated by periodic radiography and lung biopsy.

Two years were devoted to investigating pathogenesis of the disease in experimentally infected dogs, graded doses of spores being given to three age groups of dogs, after which the animals were observed for development of disease signs, complement fixation and precipitin titers, and coccidioidin sensitivity over a 12-week period. Surviving dogs were sacrificed for necropsy.

Dogs heavily infected with spores by the pulmonary route and treated with amphotericin B administered intramuscularly, failed to develop measurable serum levels of the antibiotic, and the disease was not halted in treated dogs compared with infected but untreated control animals. Similarly infected dogs receiving amphotericin intravenously quickly developed fatal uremia unless the antibiotic was considerably diluted and given only on alternate days. Dogs that received the drug intravenously developed appreciably high blood levels, and the disease could be held static for as long as 20 days.

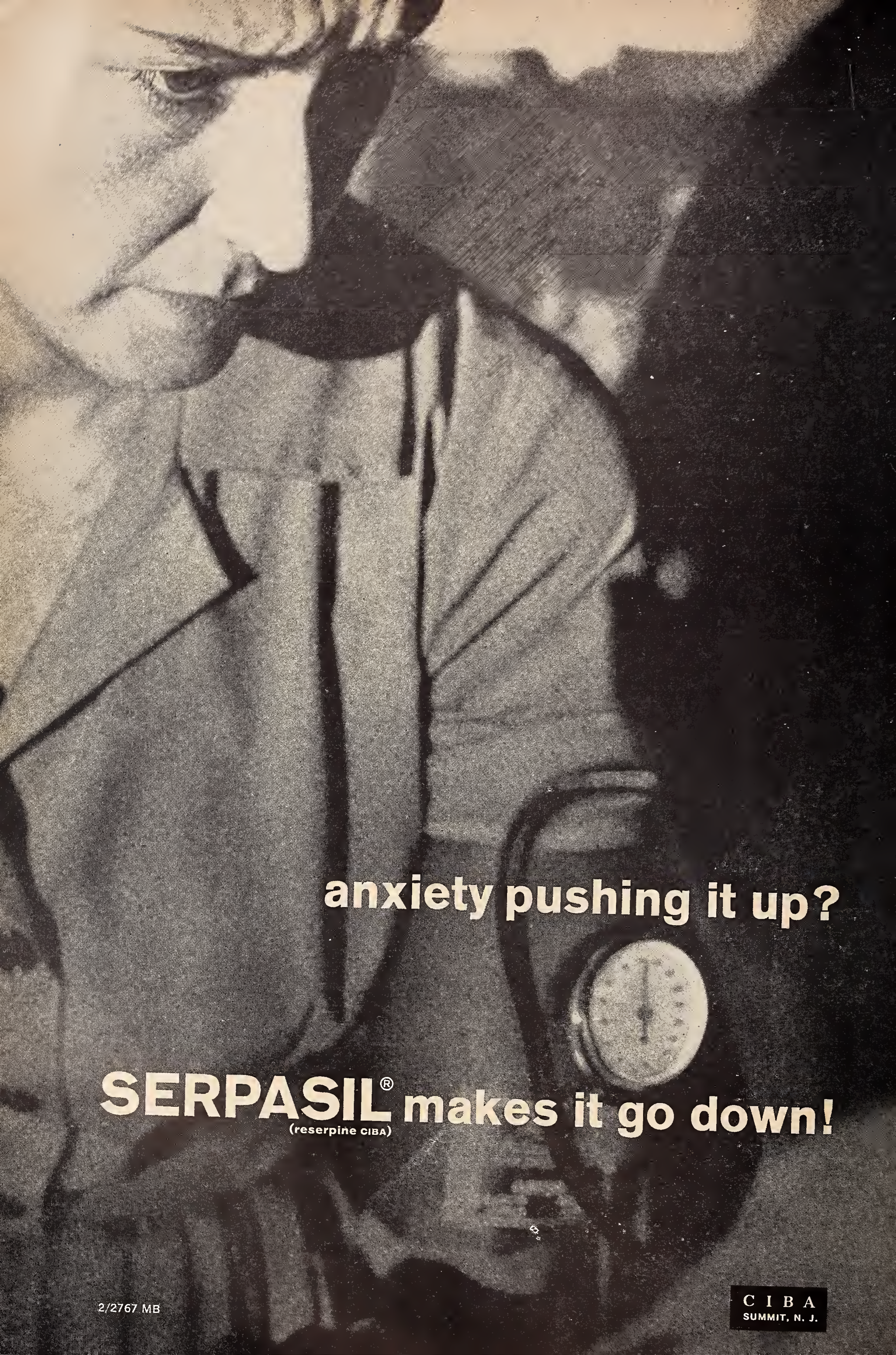
Many of over 20 spontaneously infected dogs treated with amphotericin given intramuscularly or intravaneously showed temporary improvement, only to have signs of advancing disease return. It has not been possible to say that any dog in this group received permanent benefit from the treatment.

Extremely limited supplies of another antibiotic, eulicin, have been available for intramuscular administration to a few spontaneously and experimentally infected dogs. Too few animals have been used because of difficulty in obtaining the antibiotic to make conclusions possible, but there are indications that this product is less troublesome to administer and that progress of the disease is interrupted during treatment. Toxic properties have not been noted at the dose level and interval employed.

Cattle slaughtered after fattening in southwestern feedlots harbor coccidioidal granulomas in thoracic viscera in important numbers of the total killed, but signs of disease are lacking. Ninety-three calves and yearlings of both beef and dairy breeds have been inoculated by spraying from 500,000 to 1.5 million viable arthrospores of *Coccidioides immitis* into the trachea. Over periods of 90 to 130 days of observation, all inoculated animals remained free of disease signs. At slaughter, a few granulomas were found in lung or thoracic lymph nodes, but evidence of infection was completely lacking in most animals.

The project has made interesting co-operative study of the disease possible, the attempt to produce certain lesions seen in man by experimental infection of dogs serving as an example. Practicing veterinarians participated enthusiastically in the phase involving diagnostic methods. Soil isolations of *C. immitis* by public health workers have followed diagnosis of the disease in pet dogs. In one instance where a high rate of infection persisted among dogs in a breeding kennel, neighboring soil was found to harbor the fungus, and two persons living close by had incurred clinically manifest disease. Part of the cattle used for experimental inoculation and control were provided by a rancher whose interest in "Valley Fever" developed from a severe infection experienced by his daughter. The cattle inoculation and antibiotic evaluation trials were approved and supported in part by the Arizona Tuberculosis Association and were conducted jointly with a U. S. Public Health Service veterinarian, Dr. Keith Maddy.

This project is being continued for several reasons. There are many facets of pathogenesis still to be examined. Development of a vaccine seems worthy of some effort. Clinical evolution of antimycotics is slow and difficult to interpret without animal trials. It is hoped that considerable outside support for the project will continue to be available.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Editorial

ARIZONA MEDICINE

THIS IS the first issue of ARIZONA MEDICINE published directly by The Arizona Medical Association. The past months and years have seen many unnecessary difficulties with our past contract. Possibly it should be explained that the Journal has been published under a contract which provided sixty pages of print with no profit or loss to the Association. It could not enforce cooperation by the publisher. It allowed no operating expenses for the Association or the editorial staff.

Starting with this issue, The Arizona Medical Association will serve as its own publisher. During the transition there may be difficulties — possibly more than our share of mistakes.

An active interest and participation by the members of the society would do much to improve ARIZONA MEDICINE. We encourage more articles from the members of this Association. We will cooperate in their publication. There will be no charges for the production of cuts. Reprints are to be available for the cost of printing.

We hope to give you an improved journal which, while being a non-profit publication, will care for its own costs with an improved content, makeup and distribution.

DWN

ARIZONA MEDICINE

Journal of

The ARIZONA MEDICAL ASSOCIATION, Inc.
AND
MEDICAL SOCIETY OF THE
UNITED STATES AND MEXICO

VOL. 17 JANUARY, 1960 NO. 1

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
7. Exclusive Publication — Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unused manuscripts.
8. Illustrfations — Ordinarily publications of 2 or 3 illustrations accompanying an article will be paid for by Arizona Medicine. Any number beyond this will have to be paid for by the author.
9. Reprints — Reprints must be paid for by the author at established standard rates.

(The opinions expressed in the original contributions do not necessarily express the opinion of the Editorial Board.)

LAW SUITS HARRY BRITISH

DID YOU read the above titled article which appeared in the A. M. A. News? If you did, try it again.

"If you think malpractice litigation in the United States is bad, take a look at what the British physician must endure.

Under the government-run National Health Service, a Legal Aid Committee helps indigents bring action against doctors or hospitals if the patient's claim of medical negligence appears to be valid."

"Latest 12 month statistics show:

Local legal aid committees considered 26,662 applications of which they accepted 16,046.

3,223 cases were tried in the Queen's Bench Division, with 2,671 verdicts returned in favor of the plaintiff-patient.

According to a member of the AMA Law Division the 5-out-of-6 ratio in favor of the plaintiff "is fantastic."

Quoting the Lord Chancellor, Lord Kilmuir, an editorial in the Medico-Legal Journal notes:

"It must be recognized that one of the by-products of the National Health Service has been to expose hospitals and individual surgeons and physicians to a greater risk of litigation."

This is just another one of the barbs, to be swallowed, if we continue to stand so complacently, while we are socialized.

LBS

PARAPLEGIC CARE

THE ARTICLE in this issue – "Paraplegic Care and Rehabilitation," extols the virtues of highly specialized centers, for the prolonged care and rehabilitation of paraplegics. The reasoning given by the author, for the need of such centers, is well founded.

It is stated that the Veterans Administration already has excellent equipment in centers, with personnel which have established a unique record – it is therefore proposed, that these Veterans Administration Centers, be made available for all paraplegics. It is also pointed out, that in Canada – certain Provinces have solved this problem by Independent Centers, which are used by all agencies, including the Veterans Facilities. The latter method is much more in keeping with the American Free-enterprise democratic systems, than that proposed by the author.

The Veterans Administration is a Governmental agency – it derives its funds from the public trough. By manipulation this body has within its power, the ability to set up other special services, which one by one, could excell – irrespective of the cost. This one-by-one system of addition, could soon engulf the whole practice of medicine.

At the present time, we are allowing the Veterans Administration, to care for almost twice as many non-service-connected, as they do for those liberally designated as service-connected.

Should we continue to expand the governmental control of medical care, by saying, you have a better set up, so take over? The answer is No! – we should in some instances (paraplegics care, as an example) further tap the potentials of the world's greatest system for the practice of medicine, to provide proper medical care for all people. Let us look for guidance to the Canadians, where-in the Independent organizations, services the government.

LBS

CURB NEEDED ON DRIVERS "TOO SICK TO SERVE"

When is a drunk driver not treated like a drunk driver?

When he's sick.

And here, in riddle form, is one of the real problems confronting Pima County judges today, according to information brought out in the Citizen's panel discussion on highway safety and reported in the Citizen yesterday.

A man may be staggering drunk, involved in a serious automobile collision. But when he comes to court, all he has to do is produce a letter from his physician declaring that he is too sick to be sent to jail. So he goes free – "on probation" – and ostensibly feels free to drink and drive without restriction again.

For this, we can't place undue blame on individual physicians, who are placed in difficult spots by old friends or long-time patients. But this medical gimmick is used repeatedly to dodge jail terms for people who are well enough to drink to excess, but too "sick" to pay the penalty.

There is a solution, though, if the Pima County Bar Assn. and the Pima County Medical Society would work it out together.

Why not form a small, impartial medical examining board to rule in such cases? An individual physician could place his client's medical record before the board, which would then decide whether the patient was indeed too sick to serve a jail sentence. The individual physician would be off the hook, and a judge would have a decision he could rely upon.

Repeated examples of "too sick to serve" in recent months have done little to increase the public's respect for medical ethics, so the medical society would be doing a service to its own profession if such a board were formed. And bar association cooperation in this venture would assure the public that the legal profession is doing everything possible to live up to the spirit of laws designed to reduce the ever-increasing death toll on Arizona's highways.

Reprinted from TUCSON DAILY CITIZEN
August 14, 1959

Editor's Note:

Shall we lead, or must we be perpetually driven to take necessary steps as here recommended?

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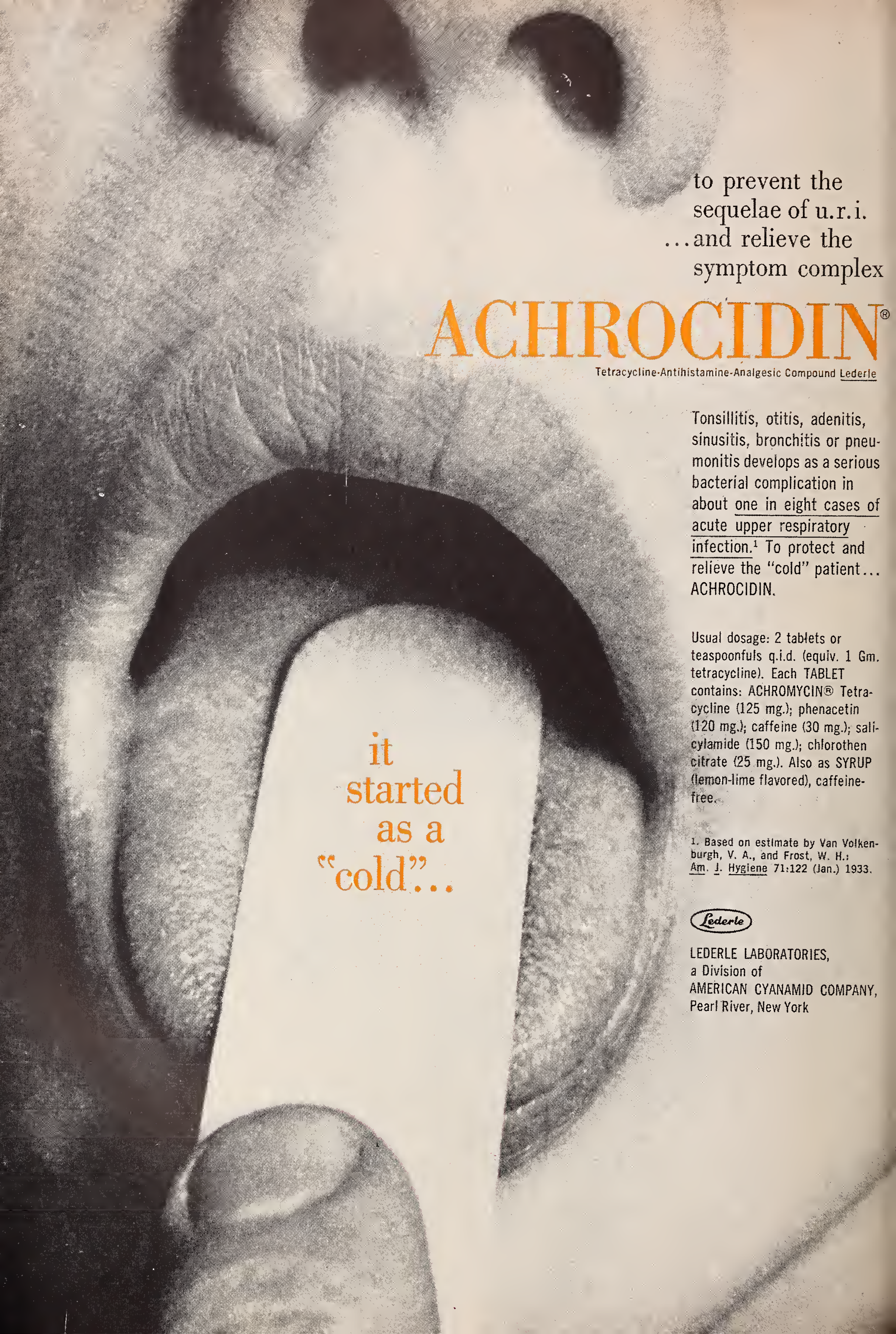
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[1] Based on estimate by Van Volkenburgh, V. A., and Frost, W. H.: Am. J. Hygiene 71:122 (Jan.) 1933.

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In Memoriam

DELAMERE FOREST HARBRIDGE, M.D.

1872-1959

1872-1959

THE CONTRIBUTIONS of Dr. Harbridge to medicine, to his community, and to the Arizona Medical Society were fruitful, inspiring and model in form and ethics.

It is therefore fitting that the following be reproduced as Dr. Harbridge wrote it several years ago. It gives a concise, complete, an unvarnished enumeration of his many and varied activities. Birth, June 18th, 1872, Racine, Wis. Died Oct. 6, 1959, Los Angeles, California.

Harbridge, Cora Francis, Wife (nee Brown) Philadelphia, Pa.

Married, June, 1901.

Harbridge, Delamere Forest, Jr., Son.

Father: Harbridge, Frederick, born, Cheshire, England, 1837.

Mother: MacRitchie, Mary, born, Dundee, Scotland, 1838, (Father, David).

Three Brothers.

Member Trinity Episcopal Cathedral, (Senior Warden, 1925-1926) Phoenix.

Mason.

Education:

- Racine Public Schools, private tutor, German, Pharmacy.
- Medical Department University of Pennsylvania, degree M.D., 1898.
- Interne St. Mary's Hospital, Philadelphia, Pa., 1898-1899.
- Ophthalmology, Preceptor, Wm. Zentmayer, M.D., Wills Hospital, Philadelphia, Pa., 1899-1913.

Professional positions:

- Assistant Ophthalmologist, St. Mary's Hospital, Philadelphia, Pa., 1899-1905, Wm. Zentmayer, M.D., Service.

Assistant Ophthalmologist, St. Agnes Hospital, Philadelphia, Pa., 1905-1908.

First Clinical Assistant, Wills Hospital, 1899-1913, Wm. Zentmayer, M.D., Service.

Lecturer: Eye Department, Philadelphia Poly Clinic Post Graduate, 1910-1913.
Wm. Zentmayer, M.D., Service, now department University of Pennsylvania.

Chief Eye Surgeon (organizer) Eye Department, Chester Hospital, Chester, Pa., 1904-1913.

Eye Surgeon Southern Pacific Railroad since 1913 at Phoenix, Arizona.

Supervising Ophthalmologist, Arizona Department Aid to the Blind.

Member of the following Medical Associations:
Philadelphia County Medical Society (Initial Medical Society Membership) October 12th, 1900. Elected Honorary Life Member 1935.

American Medical Association 1902.

Pennsylvania Medical Society 1900-1935.

Maricopa County Medical Society and Arizona Medical Association since 1913.

American Ophthalmological Society, 1918.
West Coast Ophthalmological Society, 1933.
Association of Research in Ophthalmology, 1930.

American College of Surgeons, 1932.

Diplomate, American Board of Ophthalmic Examiners, 1921.

Fifty year Medical Club, 1948 (Arizona)

Officer:

President Delaware County (Penn.) Medical Society, 1908.

Secretary Wills Hospital Clinical Society, 1910-1911.

Delegate Pennsylvania Medical Association, 1910.

President Maricopa County Medical Society, Arizona, 1917-1918.

Secretary Arizona State Medical Association, 1917-1939.

President Elect Arizona State Medical Association, 1939-1940.

President Arizona State Medical Association, 1940-1941.

Councilor at large, Arizona State Medical Association, 1941-1945.

Councilor, Medical Defense, Arizona Medical Association, 1945-1949.

Secretary Board of Managers Southwestern Medical Journal, 1915-1942.

Delegate American Medical Association, 1921.
Literary:

1. Contributed 35 published papers on Ophthalmic subjects.
2. Collaborator of Chapters on Tonic Amblyopia, Tumors of the Eye and Conjunctiva in the Year Book from 1915 to 1927.
3. Chapter on Tumors of the Eye in the Encyclopedia of Ophthalmology by Casey Woods, M.D.
4. Abstractor British Journal of Ophthalmology for the American Journal of Ophthalmology 1916-1943.

As will be noted from the above account, Dr. Harbridge was a long time secretary of the Arizona Medical Association. He related that Dr. Flinn, the pioneer physician of Prescott, came by his living quarters one day and dumped a bunch of books out on the table. Dr. Flinn told him that "You are now the new Secretary of the Arizona State Medical Society." Dr. Harbridge said he protested that he had never attended a meeting of this society and was totally unaware of the organization of it and of his duties. Dr. Flinn allowed as that didn't make any difference and that he, Dr. Harbridge, was the new Secretary and he could start his duties as of then. Dr. Harbridge states that in those days nothing seemed to be very well organized, in fact not a few men thought that the organization was probably not worth while any way. This became a challenge to the members of the State Society and Dr. Harbridge's organization of the secretary's office was indeed a monumental task.

Dr. Harbridge's capacity for public service was expansive and unlimited. In January 1958, the Arizona State Board of Welfare awarded him a special citation. He had served for twenty years as a consulting ophthalmologist to the Arizona State Welfare Department. In this capacity he certified all patients who were to have examinations by ophthalmologists, certified as to the legality of vision for grants and aids, and certified all cases who were to have surgery or other treatment for eye conditions. One of his principal contributions in this respect was the establishment of Regional Eye Clinics in the outlying counties. These were conducted under the direction of the State Blind Services and have now grown so that about nine hundred cases are examined each year in these clinics. These people would not otherwise be examined by a qualified eye physician. This certifying of cases was a tedious task, it involved a review of some 800 to 1500 cases each year. This citation also designated Dr. Harbridge as Supervising Ophthalmologist Emeritus to the State Welfare Board.

The city of Chester, England and Pennsylvania played an important in his life. Doctor's father was born and had been trained as a pharmacist in Chester, Cheshire, England. Dr. Harbridge realized early in life that his father was going to follow the European custom of settling the family inheritance on the eldest son. His father advised him to study pharmacy in his father's business in Racine. This he did, later moved to Milwaukee and then soon after that to Chester, Pennsylvania. Here he engaged in business as a pharmacist and there decided to enter medical school at the University of Pennsylvania.

The pharmacy in Chester where his father trained still operates. As you walk along the old walled city to the north gate, hard by this gate is this pharmacy. It is not designated as a pharmacy but as The Chemist, and this is the same in which Dr. Harbridge's father was an apprentice about the year 1850. You may follow the wall down to the west side of the old city to the river Dee. Chester was a western outpost of the Roman occupation, the Welch to the west resisted both the invasion of their soil and corruption of their language by Latin. Some of you will recall that during World War II parts of an old Roman galley were excavated in an area which at one time had been the harbor at the mouth of the river Dee.

Dr. Harbridge was a voluminous reader and collected a large library of medical literature. On his retirement he presented to the State Library and Archives, in the Capitol Building, a complete bound set of the last fifty years of publication of the Journal of the AMA. Many other speciality journals were contributed to the Maricopa County Medical Library.

Dr. Harbridge was a staunch supporter of organized medicine. His philosophy was laid down in his Presidential address which he delivered before the Arizona Medical Association at the annual meeting in Tucson, April 18, 1940. The following are excerpts from this address:

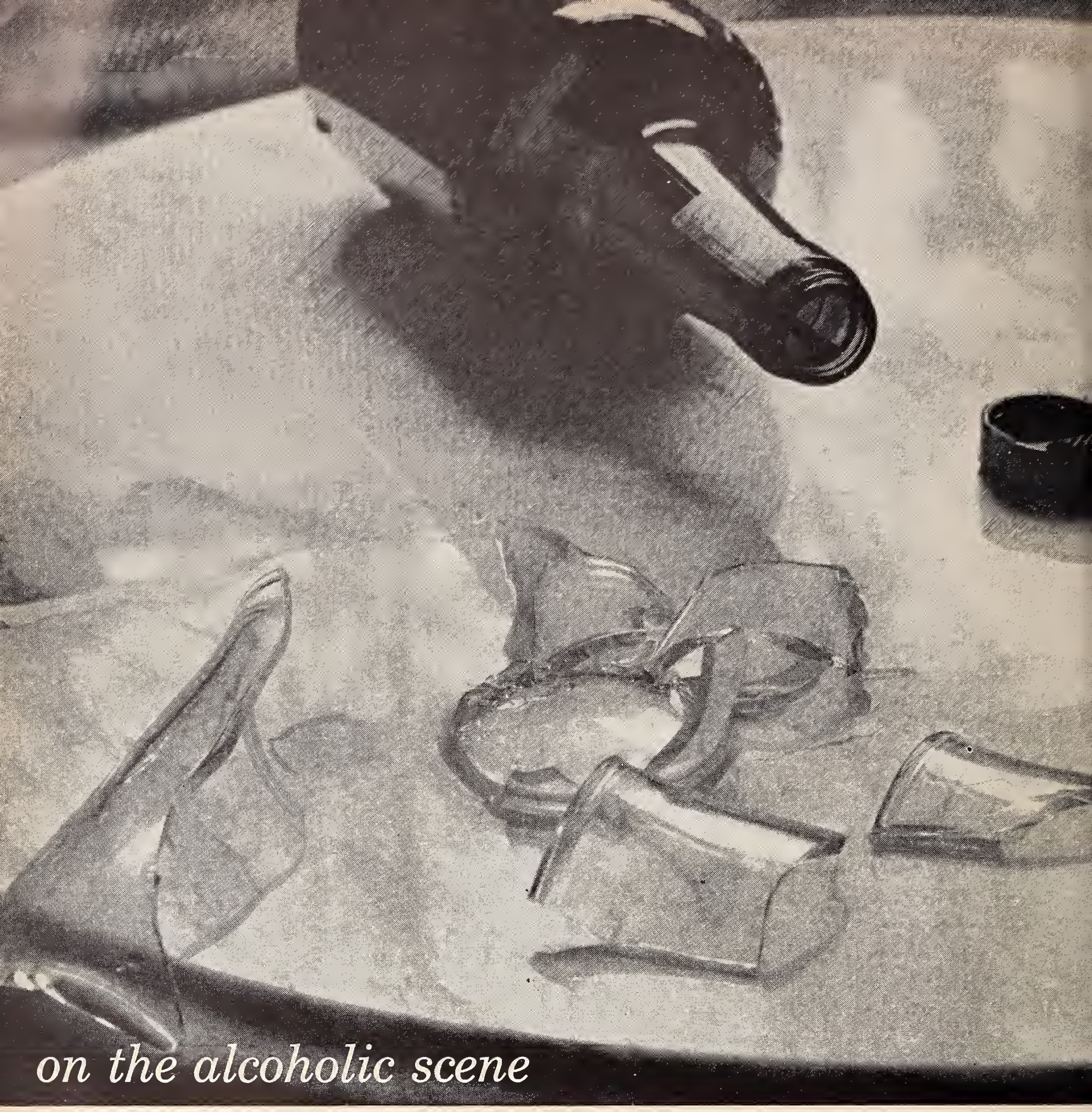
"An impartial study of our professional ethics will reveal that they are inspired by the Golden Rule, are *not* against public policy, and *not* a matter of sharply defined rules of conduct, but of fair dealing between physicians and their patients . . . I would remind . . . critics that "Medicine exists for the benefit of the afflicted, and not the afflicted for the benefit of medicine." If American medicine is to be saved from disaster, it must be through organized medicine, and the individual physician must be prepared to play his part or take the consequences . . . Half truths, illogical deductions, insidious innuendoes, and their like, can only be met by refutations and counter activities that give the lie to them . . .

He concluded in this way "Here is your organization. Use it. Serve it . . . Organized medicine must hold firm to its democratic course . . ."

"Some ships strike East,
Some ships strike West
While the self same breezes blow,
It's the set of the sail
And not the gale,
Which bids them where to go.
Like the winds of the Sea
Are the waves of Fate,
As we journey along through Life:
It's the set of the Soul
That determines the goal
And not the calm or the strife".

Delamere Forest Harbridge set a high standard of personal and professional conduct for those of us who follow.

JOHN W. KENNEDY, M.D.



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Miller, R. F.: Clin. Rev. 1:10 (July) 1958

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Arizona Medical Association Reports

BOARD OF DIRECTORS MEETING

MEETING of the Board of Directors of The Arizona Medical Association, Inc., held Sunday, October 11, 1959.

CENTRAL OFFICE ADVISORY COMMITTEE

Central Office Relocation

The Central Office of this Association has been relocated in new quarters, Suite 1021 Central Towers North, 2727 North Central Avenue, Phoenix, Arizona, occupying 1381 square feet on a 5-year term lease duly executed at a monthly rental of $431.56 ($3.75 per square foot) plus taxes. This rental is to be shared by the Board of Medical Examiners — State of Arizona to the extent of $135.00 per month and ultimately, when the Arizona Medicine Journal publication is assumed by the Association January 1, 1960, a proper proportionate charge against such operation will be similarly exacted based on occupancy of space required therefor.

The Board of Directors and the Board of Medical Examiners were polled by telephone, prior to consumation and execution of the lease aforementioned, and by unanimous action, each member approved the relocation of its offices as above indicated, effective October 1, 1959, on the terms indicated, and the Board of Directors authorized execution of the lease in behalf of the Association by its President and Secretary.

Central Office Services

Doctor Stapley reported that after a thorough study of the activities of the Central Office by the Central Office Advisory Committee, the following recommendations are presented for Board consideration and approval:

1. The central office of the Arizona Medical Association be directed to limit its activities in serving subcommittes to the call of meetings, meeting reservations, supplying information pertinent to the function of these committees, and to distributing reports and minutes of these meetings.
2. All subcommittees to be advised to elect or appoint from their membership a secretary to prepare any minutes of their proceedings, or reports of their deliberations. Subcommittees are to transmit such reports to the parent Standing Committee for recommendations to the Board of Directors.
3. All requests for called meetings and reservations by committee chairmen must be placed at least two weeks prior to the date of such meeting.
4. Central office shall continue to serve the functions and affairs of the Standing Committees as may be required, including, of course, the Board of Directors. However, executive secretaries shall not be required to attend Standing Committee Meetings simultaneously unless requested to do so by the committee chairman.

In addition to these recommendations, there are several notations by members of the committee to the effect that even the major Standing Committees should do as much of their own paper work as possible, and that, perhaps, tape-recorded minutes are not necessary at all committee meetings. Very definite feelings were expressed to the effect that an unnecessary load has been placed on our executive secretaries by demanding their attendance at all Standing Committee Meetings. The recommendation that subcommittees appoint secretaries and keep their own records might also be applied to some of the Standing Committees.

In the over-all operation of the central office, it is apparent that if all demands and requests made are met by our present staff, they will have difficulty keeping our affairs in order. We hope, by more clearly defining the services which they may be required to give to our committees, to relieve, at least in part, what some of us consider to be an excessive burden.

It was moved, seconded and unanimously carried that the report of the Central Office Advisory Committee be accepted and its recommendations put into effect.

Retirement Plan — Key Executives

The following Resolutions were considered and duly adopted by the Board of Directors:

> WHEREAS, Robert Carpenter and Paul Boykin are each, through his efforts, abilities and managerial skills contributing substantially to the success and welfare of this Association and the termination of the services of either of them would result in a loss to the Association; therefore, it is prudent that this Association indemnify itself against such loss by insuring both the life of Robert Carpenter and Paul R. Boykin for the benefit of the Association:
>
> > RESOLVED, That the purchase by The Arizona Medical Association, Inc. of a life insurance policy in the amount of Nineteen Thousand Dollars ($19,000) on the life of Robert Carpenter and Twenty-Two Thousand Dollars $22,000) on the life of Paul R. Boykin from The Equitable Life Assurance Society of the United States with this Association being designated a beneficiary of each of these policies be and is hereby approved, ratified and confirmed and it is authorized that the premium for each of these policies be paid by the Treasurer from corporate funds.
> >
> > FURTHER RESOLVED, That upon the separation from employment with this Association of either Robert Carpenter or Paul R. Boykin, the policy on the life of each of said executives, less accumulated dividends, shall be offered to such executive for purchase at the price equal to the then cash value thereof.
>
> WHEREAS, this Association has profited by the efforts, abilities and skills of its Executive Secretary, Robert Carpenter, and its Assistant Executive Secretary, Paul R. Boykin, and
>
> WHEREAS, it would be in the best interest of this Association to offer some inducement to both Robert Carpenter and Paul R. Boykin to remain with this Association by making provisions for payment of retirement benefits to them upon their retirement as active employees, and for their families, should either of them die while in the active service of this Association or after their retirement, the following resolution is hereby adopted:
>
> > RESOLVED, That the President and the Secretary of this Association are hereby authorized to enter into agreements providing retirement benefits for Robert Carpenter and Paul R. Boykin on behalf of this Association in substantially the form and style of the written agreements attached to and made a part of these minutes.

Savings Accounts — Funds Transfer

The Executive Secretary reported that at the request of the Treasurer, Doctor Yount, Jr., who is unable to attend this meeting, he asks that the Board give consideration to the matter of designation of officer signatures to appear on Association checks when issued requiring transfer of its funds in "Savings Accounts" for use in both the respective General Fund and Benevolent and Loan Fund regular checking accounts of the Association. Currently, only the name of the Treasurer has been authorized to appear on checks issued by the Association. In the instances presented dealing with Savings Account funds transfer only, Doctor Yount feels that such checks should bear the signature of two officers, the Treasurer and possibly the President.

It was moved, seconded and unanimously carried that the signatures of both the President and Treasurer shall appear on all checks issued transferring funds from the respective "Savings Accounts" to the regular checking accounts of the General Fund and Benevolent and Loan Fund of the Association.

BENEVOLENT AND LOAN FUND COMMITTEE

Organizational and Operational Details

Each member of the Board of Directors was previously furnished a copy of the minutes of the Benevolent and Loan Fund Committee meeting held August 23, 1959, setting forth its recommendations as pertains to organizational and operational details.

DOCTOR MELICK: I would first like to read for your information and the record, a letter I received from Doctor Born, Chairman of the Benevolent and Loan Fund Committee, relating to student loans:

> "I have revised the loan applications to conform with any possibility. I have decided that interest on the loan will be payable semi-annually until full payment is made with interest to begin on completion of the first year of internship. In the interest of the borrower, the promissory note can be renegotiated. Loans are to be repaid at not less than $1,000.00 per year upon entering into active practice with involuntary military services, residencies, etc., to be given special consideration.
>
> "I contacted the manager of the Prescott Valley National Bank and he advised me that they found it impractical to secure anything more than life insurance on loans. Disability insurance is not necessary for a small loan company so I think we can disregard this.
>
> "I have listed all the applications we have with the progress on each up to now and I am sure you can answer any other questions which may be brought up by the Board of Directors particularly with my files in your hands.
>
> "As far as the individuals that I would like for consideration at this time, it has been recommended by the committee and they are as follows: (interruption for motion) * * * "

It was moved, seconded and unanimously carried that the outline of procedure be approved.

It was moved and seconded that the format for procedure for loans and repayments be approved.

It was moved, seconded and unanimously carried that the aforementioned motion be amended to read: that the format for procedure for loans and repayments be approved with the deletion of the word "involuntary" as used in the phrase: " * * * involuntary military services, residencies, etc. to be given special consideration." relating to repayment of loan.

There being no further discussion on the original motion, question was called and that motion, as amended, was unanimously carried.

Student Loans

DOCTOR MELICK: There are six (6) individuals here, five (5) of whom the Committee has approved. We have letters from the Deans — they're all favorable — and as individuals, we think they are very deserving. We have one individual who is in the same class but who has not been reviewed by the Benevolent and Loan Fund Committee. The names and loans granted or to be granted are:

Leslie J. Belsher, $1,500.00; Charles Fraser, $1,500.00; Kathryn Willingham, $1,500.00; John H. Jarvis, $1,000.00; Manuel Peria, $500.00 (Tuition only); Wagner Shore, $1,000.00.

It was moved, seconded and unanimously carried that we endorse the report of the Committee.

It was further indicated the Committee does not at this time require consultation with William Nerlich, Director, Loan Fund Committee, University of Southern California; therefore, the honoraium appropriated previously by the Board will not be required.

Counsel reviewed the contents of several of his letters, copies of which were forwarded to Doctor Born for the information of his committee, dealing with the loan application and affidavit; execution of a promissory note; and life insurance as a guaranty of the loan.

HISTORY AND OBITUARIES COMMITTEE

Doctor Melick requested the Board's consideration for an appropriate memorial for Delamere F. Harbridge, M.D., recently deceased, who served the Association as its President for the term 1940-41 and as its Secretary for an unprecedented twenty-year period.

It was moved, seconded and unanimously carried that this matter be referred to the History and Obituaries Committee directing it to take appropriate action.

MEDICAL ECONOMICS COMMITTEE

Fee and Contractual Medicine

The proceedings of the meeting of the subcommittee on Fee and Contractual Medicine of the Medical Economics Committee held August 9, 1959, filed with each Board member by letter dated August 11, 1959 were reviewed. It is recommended that the Association accept a $450 relative value factor offered by the Industrial Commission of Arizona on the basis of the Relative Value Study of the California Medical Association, November 10, 1957, second edition, with the further understanding that "when the anesthesiologist or anesthetist is required to furnish materials for anesthesia, a charge for materials may be made, in addition to the fee provided for the procedure, on the basis of $5.00 for the first hour and $0.75 for each successive quarter hour or fraction thereof." This has been agreed to by the Industrial Commission.

It was reported for the record that the Board of Directors by mail and/or telephone on or about August 11, 1959, approved the recommendations of its Fee and Contractual Medicine subcommittee by a majority vote of fifteen (15) in the affirmative, five (5) not voting being out-of-town and not reachable.

The statement of the Association to appear in the Introduction of the revised Industrial Fee Schedule to be published, previously released by the President, was presented and read.

Medicare

Associate with the Medicare Contract No. DA-49-007-MD-806 there was submitted for execution on the part of this Association by the federal Office of Defense, a supplemental agreement providing for a change in the Joint Directive with reference to continued obstetrical and maternity care after the husband's death, as outlined in ODMC letter No. 10-59, dated August 20, 1959. This proposal has been reviewed by the Arizona Blue Shield Medical Service, the Fiscal Administrator, and is recommended for approval, that agency having executed the instrument as party thereto.

It was moved, seconded and unanimously carried that the President and Secretary be authorized to execute this supplemental agreement in behalf of the Association.

INDUSTRIAL RELATIONS COMMITTEE

The Industrial Commission of Arizona filed with this Association a certified copy of resolution adopted by it in meeting held June 26, 1959, appointing as members of its Medical Advisory Board the membership of the Industrial Relations Committee of this Association, effective July 1, 1959 to continue to June 30, 1960, including Doctors John F. Currin (I) of Flagstaff, Philip G. Derickson (Or) of Tucson, Juan E. Fonseca (NS) of Tucson, Frederick W. Knight (GP) of Safford, Kenneth G. Rew (PN) of Phoenix, and John H. Ricker (Or) of Phoenix. Received and filed.

PROFESSIONAL COMMITTEE

The Professional Committee of this Association in meeting held August 9, 1959, recommended as follows:

1. That the Professional Committee, after extensive study and evaluation of the provisions of H.R. 4700, 86th Congress, more frequently referred to as the "Forand Bill" (which amends the Social Security Act to provide hospital, surgical and nursing home treatment for eligible beneficiaries, principally those over 65 years of age) and examination of the facts, strongly recommends to the Board of Directors that this Association continue actively its opposition to this proposed measure as an impractical and impossible solution to the problems of the aging; and that the Congressional Delegation representing this state be adequately so informed.

Doctor Melick reported on meeting he attended in St. Louis recently, called by the AMA Council on Legislative Activites dealing specifically with the Forand Bill H.R. 4700.

It was moved, seconded and unanimously carried that the recommendation of the Professional Committee in this regard be adopted.

2. After careful consideration of the steady increase in acceptance by medical societies throughout the country (now totalling 25 out of 48 state societies) of the theory of "voluntary insurance" as a means toward meeting at least some of the health needs of the aged, and inasmuch as the Professional Committee feels that it is a fair and equitable way of financing the hospital and medical care of the older individuals, that it be the recommendation of this Committee that the state Association continue acceptance of and further encourage the development and/or extension of voluntary private and Blue Cross-Blue Shield health insurance programs to include individuals 65 years of age and over, even to the extent of providing coverage for rest home or nursing home care as well as for care in the home itself.

It was moved, seconded and unanimously carried that this recommendation of the Professional Committee be accepted.

3. That the Professional Committee reiterate its continuing philosophy of conservatism in approaching the problems of the aging, as previously declared and presented to the Board of Directors.

It was moved, seconded and unanimously carried that this recommendation of the Professional Committee be accepted.

4. That this Professional Committee recommend to the Board of Directors and urge the Association's co-sponsorship of the 9th Annual Cancer Seminar to be held at the Arizona Biltmore, Phoenix, January 14, 15 and 16, 1960.

It was moved, seconded and unanimously carried that this recommendation of the Professional Committee be accepted.

5. That it is both medically ethical and medically desirable that the county societies accept and in principle approve a standard relative value fee schedule for industrial and commercial groups.

It was moved and seconded that such recommendation might better be amended to read that it is medically ethical that the county societies may accept the principle of the relative value fee schedule for industrial and commercial groups, the unit value to be separately negotiated for each group. Eleven votes were cast in the affirmative. The chairman declaring the motion carried.

Considerable discussion ensued, several expressing the view that possibly the House of Delegates should be the appropriate body to consider a matter of such far reaching implications.

WICHE Postgraduate Psychiatry Project

For the record, it was reported that on or about August 13, 1959, by mail and/or telephone contact, the members of the Board of Directors voted, fourteen (14) in favor (six (6) not voting being out-of-town), approval of the recommendation of the Professional Committee supporting the proposal of WICHE to schedule in this area (Phoenix) a psychiatric post-graduate education project for non-psychiatric physicians. Doctor Melick reviewed the details, especially as pertains to the preliminary teaching program arranged for the instructor participants. No financial obligation on the part of the Association is involved.

Aging — Report

Doctor Hamer submitted a lengthy report which was presented and read by the Executive Secretary in his absence dealing with (a) Rocky Mountain Regional Conference held in Denver, May 8 and 9, 1959; (b) Joint Council for the Improvement of Health Care of the Aged which meeting was held Washington, D. C., June 12 and 13, 1959; (c) National Leadership Training Institute held in Ann Arbor, June 24 through 26, 1959; Hearing before the House Ways and Means Committee held in Washington, D. C., during July, 1959, referable to H.R. 4700, the Forand Bill; program of the Senate subcommittee on Aging chairmaned by Senator Pat McNamara (Democrat) Michigan; and progress of the Arizona Steering Committee in preparation for the White House Conference on Aging to be held in 1961 in Washington, D. C., each of which sesions listed and held be attended representing the Association. Already, much has been accomplished but considerably more must be achieved associate with the problems of the aging to realize some of the objectives desirable.

LEGISLATIVE COMMITTEE

Hazardous Substances

The Legislative Committee by previous action recommended introduction into the state Legislature of a model act on toxicity to cover all toxic substances. This is in line with Resolution No. 3, adopted by the House of Delegates, May 3, 1958, recommending provision for a legal requirement of not more than 1% lead content in paints marketed in Arizona on or for toys and nursery furniture or interiors of dwellings. The AMA Committee on Toxicology submitted a proposed "Uniform Hazardous Substance Act" designed as a model for uniform laws to require the declaration of hazardous ingredients and warning statements on the label and in accompanying literature of chemical products. Counsel was requested to give study thereto and develop necessary legislation.

Mr. Jacobson reported that a point had been reached wherein question is raised as to how much of the problem is "legal" and whether, or not, "medicine" should be called upon to determine medical need in Arizona for such legislation. To accomplish the latter it is recognized certain additional data is necessary to adequately evaluate such need and counsel will render a report shortly.

H.R. 4700 – Forand Bill

Doctor Melick reported upon the AMA National Legislative Conference held in St. Louis, October 2 and 3, 1959, attended by him, Doctor Hamer and the Executive Secretary.

DOCTOR MELICK: I would like to say that activities are being directed towards getting the facts down and in the meantime, in trying to engender – I wouldn't say enthusiasm, as a matter of fact I don't think is a matter of engendering enthusiasm, but what I've hoped to do is to really make the individual members of the profession just pretty – mad. It seems to me from what I learned in St. Louis and what I'm learning by trying to wade through this tome on appearances before the Ways and Means Committee that we have to get really mad at this thing and not just merely say that we support it, get out and make a resolution and then not do anything about it.

I have sent telegrams to the Arizona Hospital Association at its Annual Meeting in Flagstaff and by the good offices of Doctor Roy Young plus the telegrams, a resolution was adopted in which they go on record as opposing the Forand Bill.

I think one of the hardest jobs we'll have is convincing the Arizona Nurses Association that they should controvert what their national body has to say on the Forand Bill. I think that they and everybody else who hasn't looked into this very thoroughly has been led astray by their national body because they have told their constituent members that they are not really against the Forand Bill – they never said that in their resolution – but their big-wig in this particular volume actually controverts that statement in just so many words. I'd like to go before the Arizona Nurses Association and get them pretty – mad at their own national association, if possible.

At the meeting in St. Louis they really brought out where we stand and what we have to do to get our job done.

I will say in passing that tomorrow night at St. Joseph's Hospital, a film will be shown, the BBC British documentary film on the British National Health Service, "On Call to a Nation." It is one and one-half hours in length and well worth seeing. I'd like to see this shown at Tucson also.

AMA now has a colored slide film strip in which Doctor Orr dubs in his voice on the Forand issue. It will be available next week and we have been assured a copy which I shall use in my presentation before the Woman's Auxiliary.

Pre-marital Examinations

Doctor Jarrett expressed the thought that, in the light of recently expressed medical opinion, the pre-marital serological examination law should be reviewed and a public admission of error made.

It was moved, seconded and unanimously carried that this matter be referred to the Professional Committee for review and recommendation.

PUBLISHING COMMITTEE

Doctor Neubauer reported on the current status of the plans of for assuming the responsibility of publishing the Arizona Medical Journal.

Doctor Neubauer reported the Publishing Committee recommendations as follows:

1. Purchase of libel insurance for the Journal.
2. We plan to offer to the State Nurses Association a page or two for announcements and include them in the circulation list which will also include internes and residents in the State, the Medical Society of the United States and Mexico, Arizona hospitals, medical schools in the U. S., all State Medical Associations and Journals, military physicians on assignment in Arizona, Arizona licensed physicians practicing outside the state, VA and Indian Service physicians and Arizona medical students.
3. On the advice of the Press Bureau of the University of Arizona and of Mr. Jacobson, our legal counsel, we are not pursuing the course of a contract with our local printer but will work on a guaranteed quotation basis.
4. Rates for local advertising were tentatively established but much of this will depend on our review of such rates with the SMJAB in Chicago.
5. Contracts for local advertising will require an audit of Mr. McMeekin's books if they are obtainable. We plan to contact all local advertisers at an early date to determine length of such contracts and payment therefor.
6. Funds for reprints, especially that directed by the House of Delegates on Medical Education have not been provided. Since the $1,000.00 offered to the Board of Regents

> for its study has not to date been utilized, the Publishing Committee would recommend that we could request these funds be used for the publication of the brochure on Medical Education now that the Board of Regents have received a major grant for its study.

It was moved, seconded and unanimously carried that we write the Board of Regents saying that the Association now has an opportunity to make this contribution to the medical school survey and wonders if they would like us to use the $1,000.00 for the publication of these articles.

Doctor Neubauer reported on the AMEF "Arizona Plan" editorial by Doctor Kohl and requested authorization from the Board to expend funds for a reprint thereof to be distributed to the Arizona Pharmacists.

It was moved, seconded and unanimously carried that the Board of Directors approve the expediture of approximately $25.00 to cover the cost of reprints of Doctor Kohl's editorial on the "Arizona Plan" for AMEF.

Doctor Neubauer reported on the problems of the costs of reprints and cuts under the current business management of the Journal for the information of the Board of Directors.

It was moved, seconded and unanimously carried that a separate account be established, bookkeeping and an audit of this bookkeeping at early intervals, authorizing two individuals for signing contracts and checks related thereto, all of this separate for the Journal so that a bookkeeping system may be established in as brief a period of time as possible in order that the Association may know where it stands on the costs thereof.

It was moved, seconded and unanimously carried that the Board of Directors authorize the officers of the Association to transfer $5,000.00 to the Journal Fund on a loan basis, if needed.

PROFESSIONAL LIAISON COMMITTEE AMEF

Doctor Melick reported that Mr. A. Lee Moore, A. L. Moore & Sons Mortuary, Phoenix, had been invited to appear before this meeting to receive an "award of merit" for his contribution to AMEF, through the nationally adopted Arizona plan.

Mr. Moore did not make an appearance and it was directed that the award be forwarded to him by mail.

Doctor Melick also reported that an "award of merit" for contributions to the AMEF, for the Arizona Pharmacists had been recommended to be given at the 1960 Annual Meeting of this Association and it is anticipated that such award should be made by Doctor Harold W. Kohl.

It was moved, seconded and unanimously carried that such citation be given to the Arizona Pharmaceutical Association at the next Annual Meeting of this Association by a resolution presented through the House of Delegates.

Public Health

Doctor Steen presented and read a statement submitted by his subcommittee on Public Health referable to "mass polio vaccination programs" pointing up that the private practitioners of medicine have a primary responsibility for curative and preventive medical problems for their patients and the community as a whole. The medical societies representing the private practitioners of its various communities are urged to accept this responsibility and to initiate and promote measures to insure that adequate facilities exist for all citizens, either as groups or individuals, to reach the necessary prophylactic measures against preventable disease within their ability to pay.

It was moved, seconded and unanimously carried that this report be accepted and that a letter setting forth this statement be forwarded to each of the county medical societies.

Arizona Board of Health

The term of J. Lytton-Smith, M.D. (Phoenix) as a member of the Arizona State Board of Public Health expires February 1, 1960. Chapter 1, Article 1, Section 36-102, A.R.S. 1956, prescribes that this Association shall submit to the Governor a list of five persons, licensed practitioners of medicine and surgery who have been engaged in the practice of medicine in the state and who have proved themselves vitally concerned with public health, from which we will select one to fill the vacancy for a term of five (5) years. The following nominations were duly made by the Board:

Hugh H. Smith, M.D. (Tucson)
Ben P. Frissel, M.D. (Phoenix)
Orin J. Farness, M.D. (Tucson)
J. Lytton-Smith, M.D. (Phoenix)
James D. Barger, M.D. (Phoenix)

DOCTOR STEEN: I have this letter from Doctor William Ure who is the tuberculosis consultant for the Pima County Health Department. The letter was written because of the Attorney General's opinion of June 26, 1956, in which he, according to his opinion, advised that financial assistance for the single individual with tuberculosis would be cut off and he wrote me this letter. He says: We are writing you in regard to our conversation relative to the cutting off of single tuberculosis individuals for financial assistance under the tuberculosis control act.

I wonder if this isn't something for the tuberculosis committee of the Professional Committee.

It was directed that Doctor Steen turn this letter of request for assistance over to Doctor Farness in Tucson.

SCIENTIFIC ASSEMBLY COMMITTEE

Doctor Beaton reported on preliminary arrangements and programming associate with the annual meeting of the Association, May 4 through 7, 1960.

DOCTOR BEATON: I just wanted to let the Board know what the Scientific Assembly has had in mind. We have been guided almost entirely in setting-up the format of the next meeting by the results of the questionnaire. Almost universal on the questionnaire was the feeling that they wanted a scientific meeting and that they wanted a higher meeting so arranged that the registrants would be able to visit the scientific sessions as the first consideration. So we made some changes in how we've set this meeting up.

As you know we picked Safari as the site of our meeting. Since they do not have room for exhibits in the hall we are going to have them in a tent and we are making a virtue out of this necessity and we are having the exhibits keyed around the old fashioned medicine show.

We intend to start out Wednesday, the 4th of May, having our Board of Directors meeting that morning; Wednesday afternoon we'll have the first meeting of the House of Delegates; and that night have the Blue Shield Buffet Dinner.

Thursday A.M. starting with a breakfast seminar, scientific sessions will run until 12:30 with specialty luncheons running to 2:30 and the Blue Shield Meetings to be held at 3:00 P.M. That evening will be set aside for specialty banquets, if requested.

Friday starting with a breakfast meeting we will again have scientific sessions until 12:30 with specialty luncheons at 12:30 to 2:30 and our second House of Delegates meeting will be held Friday afternoon. The President's Dinner and Dance will be held Friday evening.

Saturday morning will be scientific sessions, the golf tournament to start at noon and a banquet for the golfers will be held Saturday night.

We are also making the request to the specialty groups that they open their luncheons and banquet meetings to anyone who wishes to attend.

We are trying to key each day with a medical or surgical topic with a number of contributions from various fields to that particular topic. For example, the first day will be on the general topic of orthopedics in pediatrics.

The Committee has made the decision that we will this year have an award paper open to the membership of the Society and we are inviting papers from the members and the best one will be read on Saturday morning as a feature of the meeting and we are going to award some sort of suitable medal and hope this will become an annual thing. We are also assigning two members to discuss each paper hoping this will be a way we can get our state members interested in the meeting. We are shifting our opening exercises on Thursday morning into the middle of that session.

MEMBERSHIP CLASSIFICATION CHANGES

With the revision of the By-Laws adopted by the House of Delegates May 2, 1959, certain membership changes or deletions, of necessity, appear to be indicated.

Maricopa County Medical Society

Rudolph Louis de Luise, M.D., Active — Dues paid for 1959, moved to Golden, Colorado. No resignation or transfer request to date. Drop from Membership December 31, 1959.

Ruth Alice Johnson, M.D., Service — Dues paid for 1959, moved to Lincoln, Nebraska. No resignation or transfer requested to date. Drop from Membership December 31, 1959.

Kent H. Thayer, M.D., Active — Dues paid for 1959, moved to Long Beach, California in 1957. Society advises was in "residency" status. To retain "active" membership status, must be in active practice in Arizona. If engaged in further training (approved residency program) may be eligible for Associate membership classification; otherwise drop from membership December 31, 1959.

Stanford F. Farnsworth, M.D., Service (Maricopa County Health Director) – Dues paid July 1, 1959, confirmed.

Hubert J. Adler, M.D., Service (VA Hospital) – Dues paid May 13, 1959, confirmed.

Pima County Medical Society

Sidney W. Ballard, M.D., Active – Dues paid for 1959, moved to Nashville, Tennessee in 1950. No resignation or transfer requested to date. Drop from membership December 31, 1959.

Robert T. Pfundt, M.D., Active – Dues paid for 1959, moved to Hines, Illinois in 1958 for residency training in Anesthesiology at the VA Hospital in Hines, to return July 1, 1960. Membership status to be changed to Associate January 1, 1960, if no further change in status.

Charles N. Sarlin, M.D., Active – Dues paid for 1959, moved to Beverly Hills, California in 1956. No resignation or transfer requested to date. Society advises doctor intends to remain in California. Drop from membership December 31, 1959.

Benson Bloom, M.D., Active – Dues paid for 1959, moved to Bronx, New York 1957-59 VA hospital, June 28, 1959 VA hospital, Albuquerque, New Mexico, full-time VA employee in each instance. No resignation or transfer requested to date. Drop from membership December 31, 1959.

Wayne E. Truax, M.D., Associate – Dues exempt, moved to Houston, Texas in 1952 for postgraduate training, military service in 1954, University of Texas, Galveston in 1958, Society advises unable to make contact, justified in dropping from membership. Drop from membership now.

Pinal County Medical Society

Louis R. Fletcher, M.D., Active – Dues paid for 1959, moved to Fairbanks, Alaska in 1955. No resignation or transfer requested to date. Drop from membership December 31, 1959.

Yuma County Medical Society

Jerome E. Andes, M.D., Active – Dues paid for 1959, located in Needles, California since 1938. Possibly Yuma Society most convenient; however, Society does not clarify. By-Laws provide for such intra-state association; however, no provision for inter-state. No resignation or transfer requested to date. Drop from membership December 31, 1959.

While the Board expressed concern regarding this development, it was pointed out that the By-Laws Committee in drafting the revisions had these situations in mind and wished to dispose of the continuing problem. It was its opinion (the Board) that it had no recourse but to follow the present By-Laws currently in effect. It approved those regular membership classifications listed as recommended by the respective Societies.

It was moved, seconded and unanimously carried that an Articles of Incorporation and By-Laws Committee be reactivated and directed to study the problem and submit any recommendations indicated.

It was moved, seconded and carried 10 votes to one, Doctor Hileman voting in the negative, that the Executive Secretary take appropriate action in accordance with the By-Laws as these problems come up.

COMMUNICATIONS

University of Arizona

Doctor Richard A. Harvill, President of the University of Arizona, by letter dated July 3, 1959, expresses appreciation of action of House of Delegates of this Association, May 2, 1959, commending its College of Pharmacy for its founding and operation of a Poison Control Center. Received and filed.

Board of Medical Examiners

Honorable Paul J. Fannin, Governor of the State of Arizona, by letter dated July 17, 1959, advises of his appointments of W. R. Manning, M. D. (Tucson), Carlos C. Craig, M.D. (Phoenix) and Roy O. Young, M.D. (Flagstaff) as members of the Board of Medical Examiners of the State of Arizona for terms commencing July 20, 1959 and expiring July 1, 1962. Received and filed.

Arizona State Department of Health

Clarence G. Salsbury, M.D., Commissioner, Arizona State Department of Health, by letter dated July 30, 1959, in behalf of the State Board of Health, expresses pleasure in the appointment of a subcommittee on Public Health of the Professional Liaison Committee to work as a liaison body between the Association and the Health Department giving great promise for the future. Received and filed.

Woman's Auxiliary

Mrs. Hiram Cochran, President of the Women's Auxiliary to the Arizona Medical Association, by letter dated July 20, 1959, exprcsses appreciation of the appointment of a subcommittee on Woman's Auxiliary of the Professional Liaison Committee; also, for the action of this Board in regard to extension of the Scholarship Loan Fund. In this latter instance, a committee will be appointed among its membership to survey the possibilities and report its findings to the Board with recommendations for approval. Received and filed.

AMA Indigent Medical Care

The Council on Medical Service of the American Medical Association, by letter dated July 10, 1959, set forth the policy on indigent medical care established by its House of Delegates recommending implementation of its recommendations at the state and county levels. Received and filed.

Socialized Medicine

Doctor Hamer by memorandum reported on action taken by the House of Delegates of AMA in annual meeting held in Atlantic City in June last referable to the resolution of this Association's House of Delegates adopted May 2, 1959 relating to Socialized Medicine. The national body adopted the following resolution:

> "WHEREAS, The American Medical Association has been in the past and continues to be completely opposed to all forms of socialism and socialized medicine; therefore be it
>
> "RESOLVED, That every government program which has implications of or might lead to socialized medicine should be scrutinized with great care before the profession enters into any such program."

Received and filed.

Joint Accreditation of Hospitals

Doctor Hamer by memorandum reported on action taken by the House of Delegates of the AMA in annual meeting held in Atlantic City in June last referable to the resolution of this Association's House of Delegates adopted May 2, 1959 relating to Joint Accreditation of Hospitals.

The Reference Committee on Medical Education and Hospitals of the AMA reported that it agrees with the statement contained in Resolution No. 7 that the program of accreditation of the Joint Commission on Accreditation of Hospitals has made excellent progress but calls attention to the "Report of the Committee to Review the Functions of the Joint Commission on Accreditation of Hospitals" (Wendell C. Stover, chairman – see JAMA 9-29-56 P. 490-500) which was adopted by the House of Delegates in June, 1956. The reference committee urged further implementation of the recommendations contained in that report and that the representatives of the American Medical Association who serve as commissioners of the Joint Commission be urged to expedite the implementation of this report. The reference committee believes that the House of Dlegates, in adopting the Committee report referred to above, has already acted with reference to the problem set forth in Resolution No. 7. It therefore recommends that Resolution No. 7 not be approved.

The House determined that no action be taken (on Resolution No. 7 at this time). Received and filed.

The American College of Surgeons by letter dated June 16, 1959 advises its Board of Regents considered the resolution adopted by this Association May 2, 1959 and authorized a study of the attitudes and policies of the Joint Commission assuring this Association of the College's concern in this matter. Received and filed.

National Society for Medical Research

The National Society for Medical Research (Chicago) by letter dated July 23, 1959, reviewed the activities of its group through the years and appealed for a grant to continue its 1959 program. Doctor Smith commended its activities.

It was moved, seconded and unanimously carried that a grant of $100.00 as a contribution to the National Society for Medical Research be authorized.

United States Pharmacopeial Convention

The United States Pharmacopeial Convention, Inc. in its "call" for a convention to be held in Washington, D. C., March 29 and 30, 1960, at Hotel Statler-Hilton, invited this Association to send one delegate thereto.

It was moved, seconded and unanimously carried that Doctor Richard L. Dexter, Tucson, be recommended for nomination to represent the

Association as its delegate to this convention.

Payson Clinic

David B. Gilbert, M.D., of Payson, by letter dated September 28, 1959, seeks the aid of this Association "in establishing the fact that the issuance of a license to an out-of-state man by the Board of Medical Examiners will serve only to jeopardize the economy of the Association's own member who has been faithfully serving the isolated community for two years and who intends to do so for the remainder of his life."

With consent of Doctors Manning and Young, members of the Board of Medical Examiners, the Executive Secretary briefly reviewed the problem at Payson Clinic and reported that the Board had already issued a temporary permit to a qualified doctor of medicine to practice in Payson on establishment of a community emergency supported by the Gila County Medical Society.

It was moved, seconded and unanimously carried that the matter be referred to the Grievance Committee for investigation and report back to the Board of Directors.

LOREL A. STAPLEY, M.D.
Secretary

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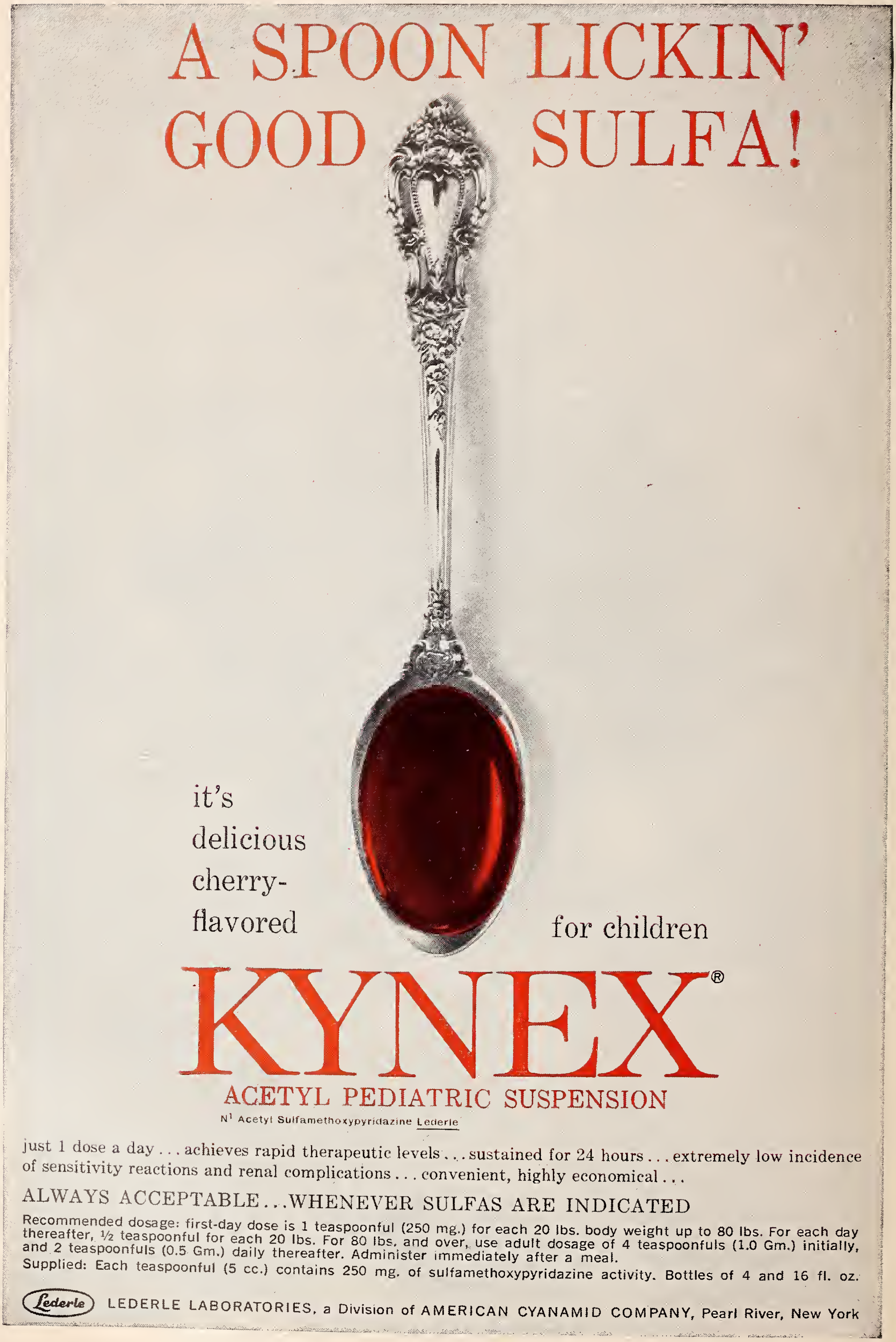

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ANNUAL MEETING QUESTIONNAIRE

PLANS for the 1960 Annual Meeting of the Association are taking definite shape, and monthly from now until May *Arizona Medicine* will report on various aspects of those plans. This first notice in the series discusses results of the questionnaire mailed to the membership, from which replies the general format of the convention has been designed. Almost 400 members answered, an excellent and encouraging response, and one which gives the Scientific Assembly Committee an unmistakable mandate in arranging the program.

The vote on the site was over two to one in favor of a resort type of hotel. The Phoenix area has been designated by the House of Delegates, and the Board of Directors has selected the Safari in Scottsdale, May 4th through May 7th. The choice was based on the considerations of ample facilities, refrigerative cooling, a separate area for our accommodation, and reasonable prices. For the minority that favored a big city hotel, the Scottsdale location will provide the ease of access and the commercial facilities that determined that choice.

The members balloted overwhelmingly for more stress on the scientific program and strongly for less emphasis on social and athletic activities. At the same time, the vote approved shorter sessions and shorter talks. In an effort to meet these preferences, the schedule provides for scientific meetings occupying the full mornings, starting at 8:00 o'clock with breakfast seminars on Thursday and Friday, and at 9:00 A.M. on Saturday in acknowledgment of the dinner dance the night before. All business assemblies are set for the afternoons so that they cannot encroach on the time set aside for papers. Thursday and Friday noons are allocated for speeialty society luncheons, and Thursday night for specialty society banquets. Speakers will be provided at these affairs, which will be open to all registrants and will thus add extra hours of professional education.

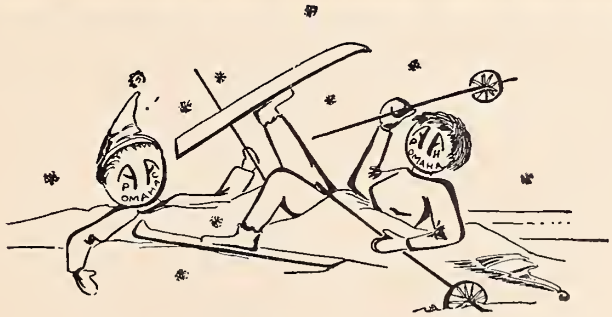
Next month the scientific program will be detailed in these pages, a program tailored to the specifications of the members as judged by answers to the questionnaire. Subsequent issues will bring short introductions to our guest speakers, their biographies and their topics. To stimulate the reader's appetite we mention only two features of this year's convention.

The exhibits will be housed in an air-conditioned circus tent, as a giant medicine show.

In an effort to restore participation in the meeting to members of the Association, discussants will be assigned to each of the guest talks, while an annual award has been instituted for the best paper by an Arizona physician. The presentation of this paper will be a feature of the Saturday session. The conditions of the award have been announced, and papers are now being received.

Get in your entry. You may achieve immortality!

L.E.B.



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BIOGRAPHICAL RECORDS

ARIZONA MEDICINE desires the following biographical material on all of the members of The Arizona Medical Association.

Many of you have filled out these questionnaires in the past. However, with the change of publication of the Journal, many of the biographies were lost, and obviously many pictures are outdated.

We would request that you please fill out the following form and return it to the editor's office, along with a picture if possible.

Thank you for your cooperation.

ARIZONA MEDICINE
720 North Country Club Road
Tucson, Arizona

"ARIZONA MEDICINE" BIOGRAPHICAL FILE

Date..............................

Name in full ....M.D.
(first) (middle) (last)

Professional mailing address ....
(street) (city) (state)

Residence ....
(street) (city) (state)

Place of birth .... Date of birth .... Sex ....

When did you move to Arizona? ....

In general practice ☐ Chosen Specialty ....
(name)

In private practice ☐ (seeing patients) Retired ☐ Not in private practice ☐

If not in private practice, indicate major activity:.......................................

....

Schools attended. Mention places, years and degrees, if any: ....

....

....

....

Medical School and date of M.D. degree: ....

Internship: ....

....

Residence: ....

....

....

Specialty Board certification: ....

Teaching Appointments: ....

....

Your professional career. Please include dates and places. ....

....

....

....

Medical, church, club or fraternal affiliations. Include dates of offices held. ....

....

....

....

Public offices held and important civic, political, charitable or other committees on which you have served. Please include dates. ....

....

....

Please list any scientific or artistic accomplishments such as inventions, discoveries, writings, musical compositions, paintings, research, etc. ....

....

....

If ever in military service, give dates, branch of service, unit, decorations, etc. ....

....

Interesting hobbies or special activities: ....

Names of parents and their address: (Please give names even if deceased)

Father ....

Mother ....

Father's vocation ....

Brothers and sisters and their addresses: (Please furnish sisters' given names and their husbands' names) ....

....

....

....

Your marriage, to whom, when and where: ....

....

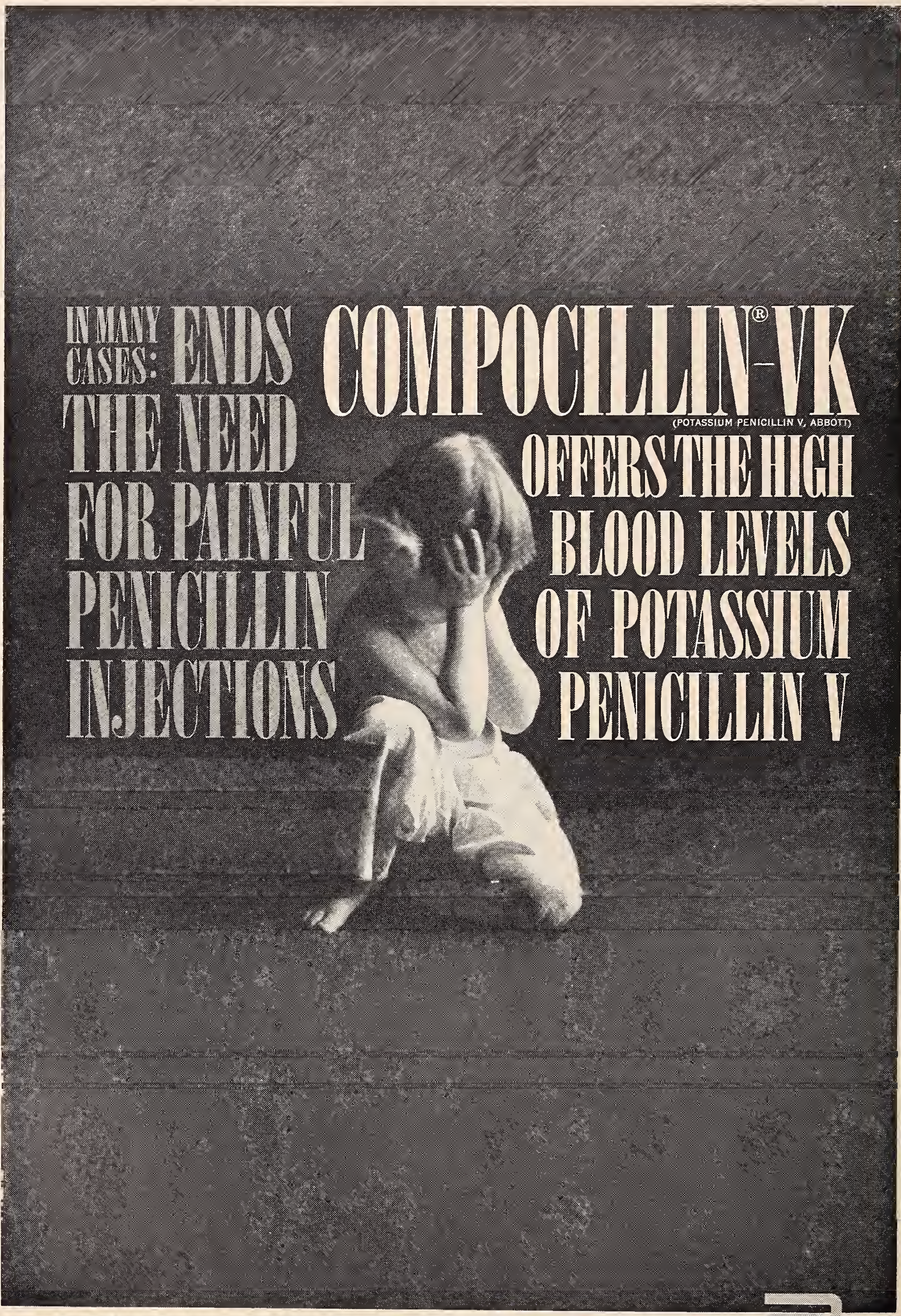
Your children, their birth dates and addresses: ....

....

....

Signature ..............................M.D.

PHOTO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THE SIXTEENTH ANNUAL CONFERENCE

of STATE PRESIDENTS, PRESIDENTS-ELECT
NATIONAL OFFICERS AND CHAIRMEN
Women's Auxiliary to the American Medical Association
October 5-7, 1959 Drake Hotel, Chicago, Illinois

THEME: OPPORTUNITIES FOR SERVICE IN THE COMMUNITY.

THE YEAR ahead will offer many challenges to the Medical Auxiliary member. If we are to fulfill our objectives we must all assume more responsibilities than we have ever done before. Because of the increasing costs of medical education, our support of A.M.E.F. is more important than ever. Our opposition to the Forand Bill encompasses a positive program for the aging. Civil Defense has called upon the doctor's wife to pilot a program which could save our country if war comes. Our program is demanding of your time; but if we are to pass to our children the heritage of freedom that we have enjoyed, we must find the time to meet it.

This was the "feeling" of the Conference that I came away with. I hope that I can impart some of it to you.

LEGISLATION

Mr. C. Joseph Stetler, Director Law Division, A.M.A., urged members to make personal call on senators, during recess, regarding the Forand Bill.

MEMBERSHIP

A panel type discussion was presented, offering suggestions for increasing membership.

BULLETIN

Of 80,000 members of the Medical Auxiliary, 10,000 subscribe to the Bulletin.

A.M.E.F.

Dr. John F. Sheehan – Dean, Strich School of Medicine, Loyola University – speaker.

Some of the highlights of Dr. Sheehan's Speech:

1. Tuition fees for medical school have increased 114% since 1949.
2. The budget for all medical schools last year was $116,000,000.
3. The federal government is now furnishing one-half the money used for research.
4. AMA gave $1,000,000 to medical schools last year.
5. Women's Auxiliary gave $140,500 to A.M.E.F.
6. Our goal next year is $175,000.

PROCEDURES

1. By Laws – Lincoln once said, "Important principals may and must be flexible." One of the problems discussed pertained to reciprocity of Auxiliary members between states.
2. Finance – At the present time, in the national savings, there is $111,000.00, which would be sufficient to operate the Auxiliary for two years, without income.

COMMUNITY SERVICE

AMA Program for the Aging.

Mr. George Cooley, secretary, Council on Medical Service, AMA, stated that the medical profession had assumed the leadership across the country to study the problems of the older citizen. He urged Auxiliary members to co-operate and participate in this program. The AMA office is anixous to receive all material pertinent to the facilities and care of the aged in every community across the country. He urged us to participate in the State Conference, in preparation for the White House Conference, in 1961.

MENTAL HEALTH

The Mental Health Program does not change appreciably from year to year. Priority projects for next year in this field are three:

1. Promotion of two educational series – "Milestones for Marriage," and "Pierre the Penguin."
2. Alcoholism education to meet a serious social problem.
3. Participation in the conference on aging.

SAFETY

Our safety goals remain the same this year – safety in the home, and on the highway. The AMA suggests we promote education for poison control.

PROGRAM

The program chairman is probably the most important committee member on the Auxiliary

Board. In the large community, the only real contact with most auxiliary members may be the actual meeting; and to a large extent, they will attend only if the program is inviting. In smaller communities, program material may be very limited. Plan programs to meet Auxiliary needs, and further health and education in the community.

PARAMEDICAL CAREERS RECRUITMENT

Loan vs scholarship seemed to be the problem of this particular committee. The trend seemed to be toward scholarships; however, it was generally agreed that loans are more desirable.

A new scholarship program is being offered by the National Foundation Health Scholarship Association (formerly polio). Health Scholarships are four-year college scholarships. They pay $500.00 a year, or a total of $2,000.00. Each is to help a student prepare for a career as a nurse, an occupational therapist, a medical social worker, or a doctor. (Arizona will receive five).

CIVIL DEFENSE

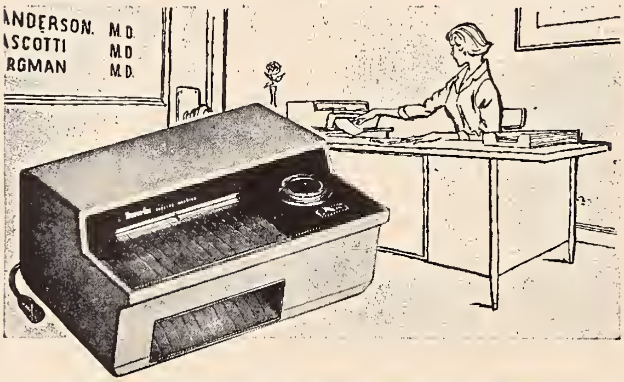
We have been asked to support a new civil defense program, geared to the women of our country. This plan was explained, and a kit containing the complete program was distributed to each Auxiliary member. These kits will be available through our State Civil Defense Director.

AMA ROUNDUP

Dr. Ernest B. Howard, Assistant Executive Vice President, AMA, gave a summary of the AMA activities for the year. Dr. Howard urged all Auxiliary members to work with their local Medical Society to defeat the Forand Bill. He pointed out that this bill will be approved or defeated by a "grass roots" movement. He urged support of the White House Conference for children and youth in 1960. He announced that "Today's Health" would no longer be sold by the Medical Auxiliary.

My own personal reaction to the three days of information is one of satisfaction. I believe we have fewer problems than most states, more participation, a greater percentage of members, make a fair share to A.M.E.F., work as closely with the Medical Society as Dr. Howard advises; and in view of our exploding population, seem to be ahead of the membership problem. However, let us not rest on our laurels.

No more late billing...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More and more people get blood every year:

Year	Number of hospital patients given blood
1952	1.6 million
1953	1.7 million
1954	1.8 million
1955	1.9 million
1956	2.0 million
1957	2.0 million
1958	2.2 million

(from New Medical Materia, Vol. 1, No. 10)

DOCTORS GAVE $4,154,450 *TO MEDICAL SCHOOLS IN* 1958

How the gift dollar was divided up:

Unrestricted Use	65.5c
Building Funds	20.6c
Endowmen Funds	3.6c
Scholarship and Student Aid	2.6c
Specific College Depts.	2.2c
Research	1.9c
Teaching Budgets	0.9c
All Other	2.7c

The average contribution amounted to $39.98. (From New Medical Materia, Vol. 1, No. 10)

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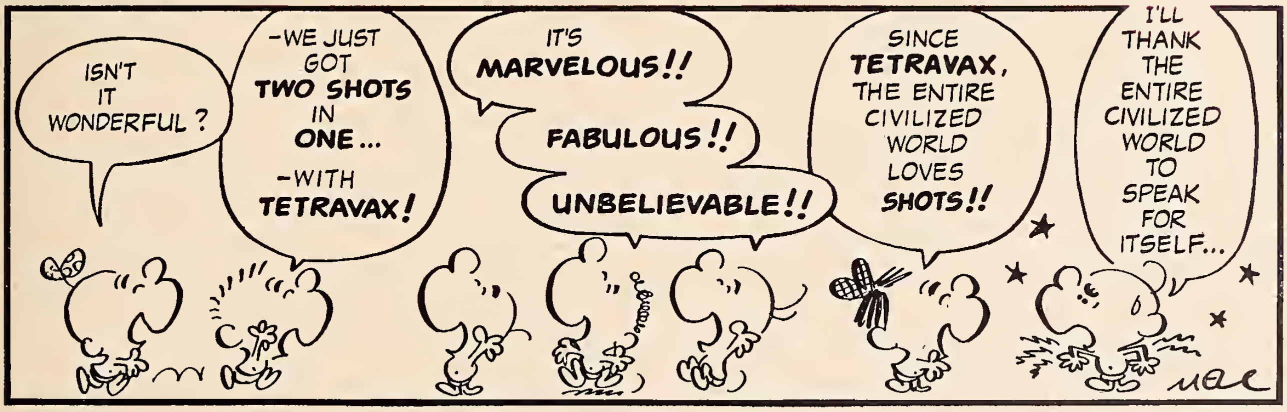
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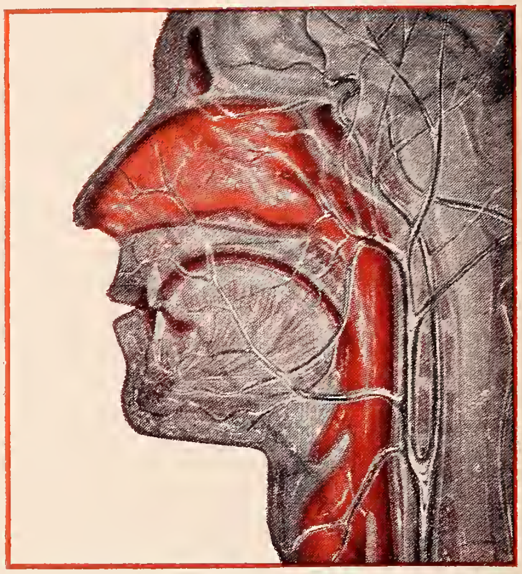

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- in nasal and paranasal congestion
- in sinusitis and postnasal drip
- in allergic reactions of the upper respiratory tract

Triaminic[2,3] *is safer and more effective than topical medication*

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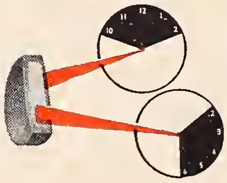
- avoids "nose drop addiction"

Relief is prompt and prolonged because of this special timed-release action:



first — the outer layer dissolves within minutes to produce 3 to 4 hours of relief

then — the core disintegrates to give 3 to 4 *more* hours of relief

Each Triaminic timed-release Tablet provides:

Phenylpropanolamine HCl	50 mg.
Pheniramine maleate	25 mg.
Pyrilamine maleate	25 mg.

Dosage: 1 tablet in the morning, midafternoon and at bedtime. In postnasal drip, 1 tablet at bedtime is usually sufficient.

Each timed-release Triaminic Juvelet® provides: ½ the formulation of the Triaminic Tablet.

Dosage: 1 Juvelet in the morning, midafternoon and at bedtime.

Each tsp. (5 ml.) of Triaminic Syrup provides: ¼ the formulation of the Triaminic Tablet.

Dosage (to be administered every 3 or 4 hours): *Adults* — 1 or 2 tsp.; *Children 6 to 12* — 1 tsp.; *Children 1 to 6* — ½ tsp.; *Children under 1* — ¼ tsp.

1. Fabricant, N. D.: E.E.N.T. Monthly *37*:460 (July) 1958.
2. Lhotka, F. M.: Illinois M. J.: *112*:259 (Dec.) 1957.
3. Farmer, D. F.: Clin. Med. *5*:1183 (Sept.) 1958.

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Topics of Current Medical Interest

ARIZONA POISONING CONTROL INFORMATION CENTER

Vesicating Caterpillars

A NUMBER of telephone inquiries were made at the Arizona Poisoning Control Information Center during the months of September and October seeking information as to the toxic potential of certain caterpillars found around homes in Arizona. In most cases, the inquiries came from the parents of children who handled the caterpillars and who complained of severe pain localized in the skin area which came in contact with the caterpillars.

The caterpillar that is apparently the most frequently involved is the Palo Verde Buck Moth *(Hemileuca tricolor)*. This caterpillar is commonly found on or near palo verde trees during the months of September and October. It bears numerous spiny, branched, fragile hairs containing a chemical substance which is a dermal vesicant. This highly irritating substance, the chemical nature of which is unknown, is contained in the hollow cavities of the hairs. When a caterpillar is touched or handled, these hairs are broken and the irritant is actually injected into the skin. Various degrees of skin irritation may be produced depending upon the amount of the irritant deposited. Signs and symptoms of the irritant effects on the skin may include reddening, itching, intense burning pain, and vesication. These effects are localized at the site of contact with the irritant. The recommended treatment consists of washing the affected skin area with soap and water and of applying a bland antiseptic ointment containing a local anesthetic in a petrolatum base.

A description of the Palo Verde Buck Moth is as follows:

Fully grown caterpillars are 1½ to 1¾ inches long and approximately ⅜ inches in diameter. They are pale greenish gray, and the outer surface resembles finely grained leather. The segmented body possesses 6 complete rows of dark spiny hairs which branch from a common axis. Two extra rows of these hairs are located on the first 5 and the last 2 segments. The hairs on the first segment behind the head are especially long, approximately 3/16 inches, and give a crown-like appearance. The head of the caterpillar is brown and does not possess hairs.

The Palo Verde Buck Moth disappears in late October. At that time they leave the palo verde trees and spin cocoons in sheltered places. The rather handsome moths emerge sometime between the months of January and March, but are perfectly harmless.

HYPOTHERMIA IN THE TREATMENT OF CARBON MONOXIDE POISONING

Deaths from various sources of carbon monoxide poisoning amount to several thousand annually in the United States. Poisoning in the home as the result of defective heating appliances or as the result of inadequate ventilation accounts for over 100 of these fatalities. Ten cases of carbon monoxide poisoning in Arizona were reported to the Arizona Poisoning Control Information Center during 1958-59. With the approach of the cold season, the incidence of carbon monoxide poisoning in the home is likely to be increased.

Typically, poisoning from carbon monoxide gas is treated by removal of the victim to fresh air or by the administration of oxygen. In severe cases of poisoning, the victim is treated with pure oxygen, and, if respiration has failed, artificial respiration is also instituted.

Recently, Craig and co-workers(2) reported the successful use of hypothermia in the treatment of a case of severe carbon monoxide poisoning in an 18-year-old man. Several hours after admission to the hospital, the victim exhibited episodes of spontaneous decerebrate rigidity and failure to respond to painful stimuli. Since past experience indicated that survival is rare under such circumstances, the prognosis appeared hopeless. Hence, hypothermia was recommended because of the success reported by others with this therapy in other conditions associated with central nervous system hypoxia in humans and also in experimental animals subjected to carbon monoxide intoxication(3). Ice was packed around the patient over a thin plastic sheet and the body temperature was lowered to 32 degrees C (92 degrees F) within two hours. Chlorpromazine was administered to control shivering. Twelve hours after hypothermia was instituted the patient responded to painful stimuli and attempted to talk. After 32 hours of continuous refrigeration, he spoke normally and could move his extremities well. Cold treatment was then discontinued and the patient was gradually rewarmed during the next 8 to 12 hours. At the time of discharge from the hospital, two weeks after admission, the patient was normal in mentality and personality and exhibited no neurological deficit. A follow-up study eight months later showed him to be normal in every respect.

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*The poisoning cases included in this report for the month of September are in addition to those cases already reported for September in News Bulletin No. 10 (October, 1959).

*STATISTICS OF 101 POISONING CASES IN ARIZONA DURING SEPTEMBER AND OCTOBER**

AGE:	77.2% involved under 5 year age group	(78)
	3.0% involved 6 to 15 year age group	(3)
	7.9% involved 16 to 30 year age group	(8)
	4.0% involved 31 to 45 year age group	(4)
	7.9% involved over 45 year age group	(8)
	0.0% were not reported	(0)
NATURE OF INCIDENT:	86.1% accidental	(87)
	13.9% intentional	(14)
TIME OF DAY:	34.6% occurred between 6 a.m. and noon	(35)
	37.6% occurred between noon and 6 p.m.	(38)
	17.8% occurred between 6 p.m. and midnight	(18)
	5.0% occurred between midnight and 6 a.m.	(5)
	5.0% were not reported	(5)
OUTCOME:	97.0% recovery	(98)
	1.0% fatal (aspirin poisoning)	(1)
	2.0% were not reported	(2)

CAUSATIVE AGENTS:

		Number	Per Cent
Internal Medicines			
Aspirin		33	32.5
Other Analgesics		2	2.0
Barbiturates		15	14.7
Antihistamines		2	2.0
Laxatives		4	4.0
Cough Medicine		1	1.0
Tranquilizers		0	0.0
Others		9	8.8
	Subtotal	66	65.0
External Medicines			
Liniment		0	0.0
Antiseptics		4	4.0
Others		0	0.0
	Subtotal	4	4.0

Household Preparations			
Soaps, Detergents, etc.		0	0.0
Disinfectants		1	1.0
Bleach		1	1.0
Lye, corrosives, drain cleaners		2	2.0
Furniture and floor polish		1	1.0
	Subtotal	5	5.0
Petroleum Distillates			
Kerosene		2	2.0
Gasoline		2	2.0
Others		2	2.0
	Subtotal	6	6.0
Cosmetics		5	5.0
Pesticides			
Insecticides		6	6.0
Rodenticides		0	0.0
Others		0	0.0
	Subtotal	6	6.0
Paints, Varnishes, Solvents, etc.		1	1.0
Plants		3	3.0
Miscellaneous		4	4.0
Unspecified		1	1.0
	TOTAL	101	100.0

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1. Grateful acknowledgement is made to the Department of Entomology, College of Agriculture, The University of Arizona, Tucson, for information presented in this report on caterpillars.

2. Craig, T. V., Hunt, W., and Atkinson, R., "Hypothermia — Its Use in Severe Carbon Monoxide Poisoning," New. Eng., J. Med. 261:854 (October 22, 1959).

3. Giaja, J., Markovic-Giaja, L., and Sokic, P., "L'hypothermie experimentale et la toxicite de l'oxyde de la strychnine", 149: 447, 1955.

4. Arizona Poisoning Control Information Center News Bulletin No. 10, October, 1959.

POISONING CONTROL TREATMENT CENTER, WINSLOW, ARIZONA

A poisoning control treatment center for the community of Winslow, Arizona, and nearby areas is located at the Winslow Memorial Hospital in Winslow. The telephone number is 1580. The Winslow Poisoning Control Treatment Center became a part of the Arizona Poisoning Control Network in April, 1959. The name of this Center should be included in the list of Arizona Hospital Poisoning Control Treatment Centers presented in a recent A.P.C. News Bulletin(4).

Willis R. Brewer, Ph.D.
Dean, College of Pharmacy
The University of Arizona, Tucson

Albert L. Picchioni, Ph.D.
Pharmacologist and Director
Arizona Poisoning Control Program
The University of Arizona, Tucson

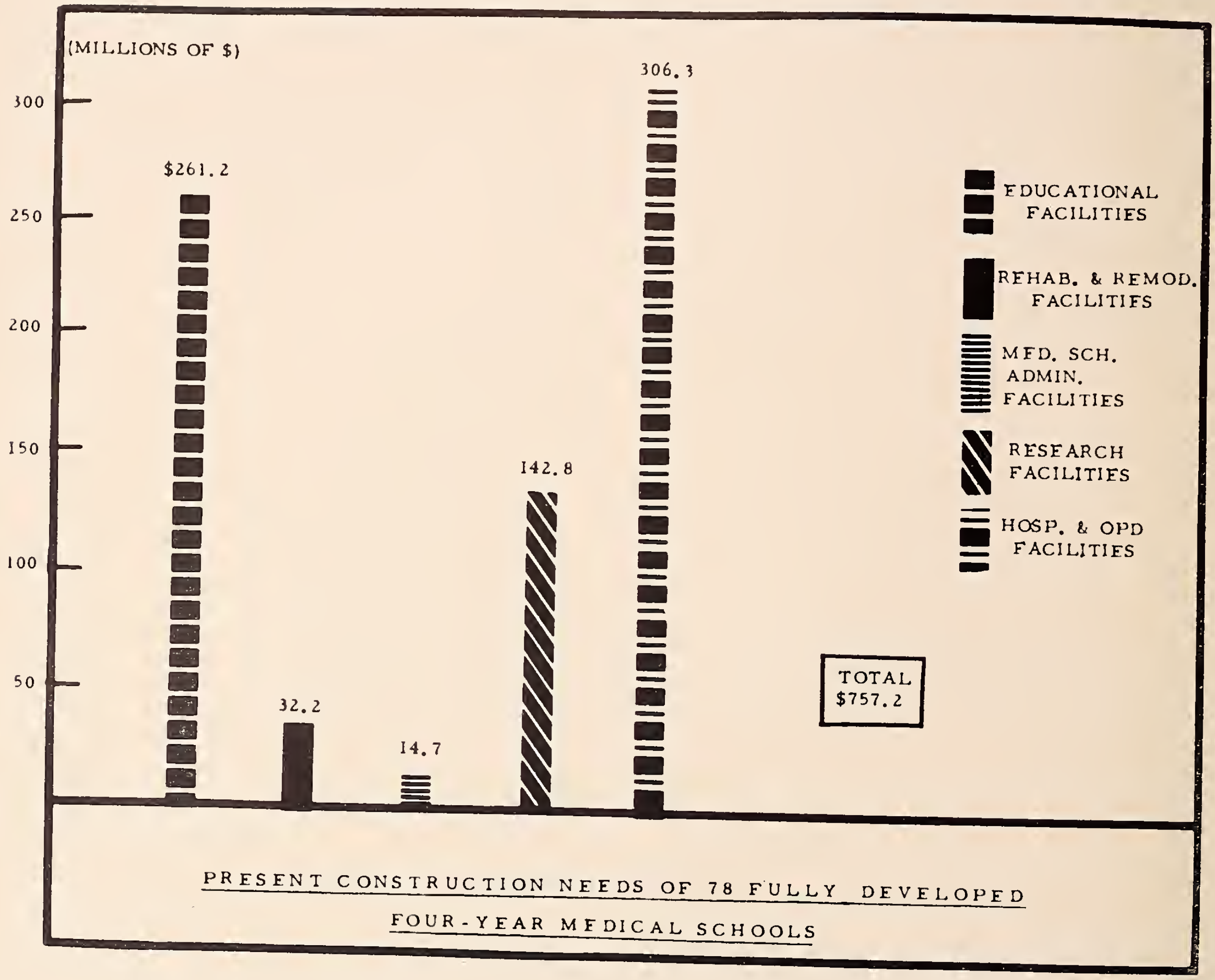
Lincoln Chin, Ph.D.
Pharmacologist
The University of Arizona, Tucson

ANTITRICHOMONAL ANTIBIOTIC

A new crystalline antibiotic, fervenulin, has been isolated from a species of soil actinomycete, *Streptomyces fervens.* De Boer *et al.,* of the Upjohn Company, reported that the antibiotic demonstrated antibacterial, antifungal, antiparasitic, and anti-tumor-cell activity in vitro. In-vivo studies in mice showed fervenulin to be effective against *Trichomonas vaginalis* and *T. foetus,* a 75 per cent cure rate being obtained with intraperitoneal administration. However, the in-vivo studies showed little activity against bacteria, fungi, and tumors.

(from Seventh Annual Antibiotic Symposium, Nov. 4-6, 1959, Washington, D. C.)

ASSOCIATION OF AMERICAN MEDICAL COLLEGES



PRESENT CONSTRUCTION NEEDS OF 78 FULLY DEVELOPED FOUR-YEAR MEDICAL SCHOOLS

Construction Needs

IN A RECENT AAMC survey, seventy-eight fully developed four-year United States medical schools indicated a need for $757,200,000 in construction funds between now and 1965 for the building of new teaching, research, hospital, outpatient, and administrative facilities, as well as for the remodeling and renovation of existing plants.

The above paragraph provides a breakdown of this estimated need for construction funds exclusive of student dormitories, recreational areas, and other facilities not directly related to teaching programs.

Student Detail Men

Forty students throughout 49 four-year United States medical schools were known to be working as pharmaceutical detail men during the school year, according to information received in the 1958 questionnaire of the Liaison Committee on Medical Education. Deans from 33 schools, responding to the same questionnaire, reported a knowledge of 45 students who were similarly employed during the summer vacation.

Student Externs In Hospitals Not Affiliated With Medical Schools

From the same questionnaire of the Liaison Committee on Medical Education, information was obtained on the number of medical students throughout 38 schools who were employed as externs in hospitals not affiliated with medical schools; 1.7 per cent of the Sophomore students; 8.5 per cent of the Junior students, and 14.2 per cent of the Senior students were so employed during the 1957-58 academic year.

Are Fewer Medical Students Working?

It appears that fewer medical students were

Submitted by the Division of Operational Studies of the AAMC, 2530 Ridge Ave., Evanston, Illinois. Source of information will be furnished on request.

employed during the academic year 1957-58 than in the two immediately preceding years. The dean's offices of 39 United States medical schools recently reported that 27.4 per cent of the students were employed during 1957-58. This compares with 35 per cent who were employed in 1956-57, as reported in "Ecology of the Medical Student." Approximately 49 per cent of the students were earning part of their medical school costs in the school year 1955-56, according to a sample survey of 44 schools conducted by the National Opinion Research Center.

Tuition Fees Going Up

Since 1939 the average annual tuition fee for medical schools in the United States has increased 114 per cent. Thirty-two per cent of the increase occurred between the years 1950 and 1956. During this same six-year period, the average family income increased 30 per cent, and the cost-of-living index increased by 16.9 per cent.

Early reports from a few medical schools indicate that some schools will raise tuition fees again this year.

The Board of Medical Examiners, State of Arizona

Officers for the fiscal year 1959-60, elected October 17, 1959 are:

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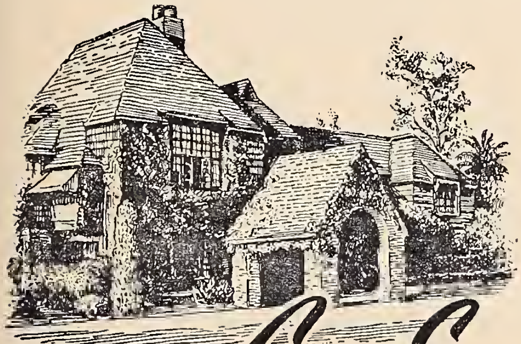

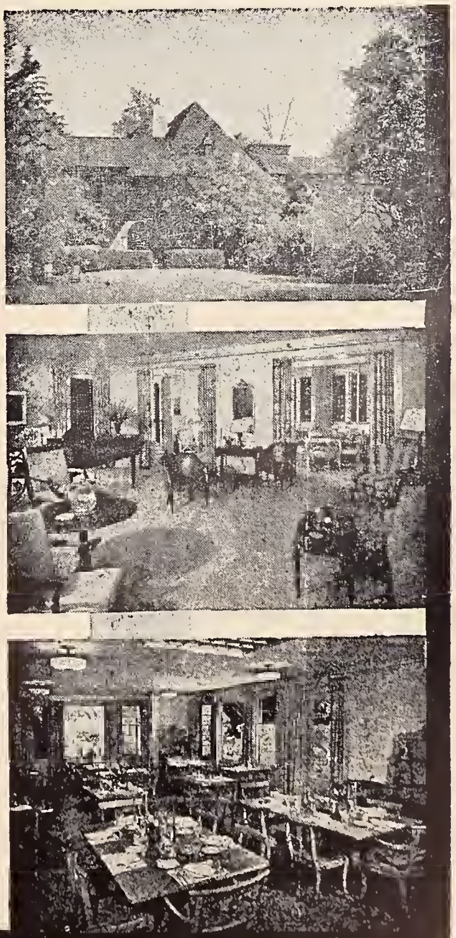

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WRITE FOR OUR ILLUSTRATED BOOKLET

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First of all, they have more in common than mere delectability to eye and palate: they all include *glyceryl guaiacolate.* This remarkable expectorant aids the coughing mechanism by increasing the secretion of Respiratory Tract Fluid,[1] which helps liquefy sputum,[1,3] makes bronchial and tracheal cilia more efficient,[1,2] and acts as a demulcent.[1,3-5] Through its effects, all four expectorants promote the natural purpose of the cough, which is to remove the irritants that cause it.[1,2]

In addition, the Robins antitussive armamentarium provides a choice of widely accepted drugs in various combinations with glyceryl guaiacolate for treating different kinds of coughs and associated symptoms. For antihistaminic effects, there is Dimetane® or prophenpyridamine; for bronchodilation and nasal decongestion, there are sympathomimetic agents; and for suppression of the "too frequent" cough, there is codeine or dihydrocodeinone.

Robitussin®

Each teaspoonful contains:

Glyceryl guaiacolate	100 mg.

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Each teaspoonful contains:

Glyceryl guaiacolate	100 mg.
Prophenpyridamine maleate	7.5 mg.
Codeine phosphate	10 mg.

(exempt narcotic)

Dimetane® Expectorant

Each teaspoonful contains:

Parabromdylamine maleate (DIMETANE)	2 mg.
Glyceryl guaiacolate	100 mg.
Phenylephrine HCl, USP	5 mg.
Phenylpropanolamine HCl, NNR	5 mg.

Dimetane® Expectorant-DC

Each teaspoonful contains the Dimetane Expectorant formula *plus* Dihydrocodeinone bitartrate, NF .... 1.8 mg.
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References: 1. Cass, L. J., and Frederik, W. S.: Am. Pract. & Digest Treat. *2*:844, 1951. 2. Blanchard, K., and Ford, R. A.: Journal-Lancet *74*:443, 1954. 3. Hayes, E. W., and Jacobs, L. S.: Dis. Chest *30*:441, 1956. 4. Blanchard, K., and Ford, R. A.: Rocky Mountain M. J., Vol. 52, No. 3, 1955. 5. Boyd, E. M., and Pearson: Am. J. M. Sc. *211*:602, 1946.

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HIGHLIGHTS OF HEALTH MANPOWER REPORT
WICHE

Here are highlights from the WICHE report on *Meeting the West's Health Manpower Needs* presented to the Western Governors' Conference September 25. The report was compiled from WICHE studies in the various health science fields. The forthcoming report on medicine alone, entitled *Medical Manpower Needs in the West,* can be obtained by writing the WICHE office in Boulder.

Growing Manpower Shortages

If we continue our present graduations from Western schools, by 1970 we will have produced only:

One-third the doctors needed – 600 of the 2300 needed

One-fourth the dentists needed – 400 of the 1700 needed

One-third the nurses needed – 2650 of the 6400 needed

Almost enough veterinarians – 150 of the 200 needed

One-fourth the dental hygienists needed – 80 of the 300 needed

In mental health, with present educational facilities, it will take . . . 29 years to fill the gap in psychiatry . . . 21 years to fill the gap in clinical psychology . . . 9 years to fill the gap in social work.

ADDITIONAL EDUCATIONAL FACILITIES NEEDED

If the West is to prevent acute shortages in these areas it needs:

In Medicine, more than 1,000 added places for entering students. In the immediate future, we need 500 added places, i.e., expansion of existing schools by 25 per cent plus three new schools.

For Dentistry, 1,260 added places for entering students. In the immediate future, we need to expand all existing schools and establish five new schools.

For Nursing, at least 2,000 more graduations annually at the diploma school or junior college level, 1,000 at the baccalaureate level, and 650 at the masters' level, plus more post-master's students. In the immediate future, we need to expand existing junior college programs to an average graduating class of 50, double existing baccalaureate programs, expand master's programs greatly, and create new programs at each of these levels.

For Veterinary Medicine, only modest enrollment increases in existing programs of undergraduate education for veterinarians. Graduate programs should be strengthened and expanded, however, to encourage more veterinarians toward teaching and research.

For Dental Hygiene, 500 added places for entering students, or the equivalent of 10 new schools. In the immediate future, we should open new schools and expand present facilities. Each Western dental school should provide for training dental hygienists. Other institutions such as liberal arts colleges and junior colleges should immediately consider establishing training programs for dental hygienists also.

For Mental Health, attention both to the specialized programs such as psychiatry and to the basic health science programs upon which the mental health specialties depend. To expand the supply of psychiatrists, for example, medical schools must be expanded since the psychiatric specialty draws on them as a source. Recruitment and continuation education also are important.

For Public Health, expansion of basic health science programs, recruitment efforts, and continuation education programs are needed, as in mental health.

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"Relief from pain was usually rapid and sometimes dramatic"[1]

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"... A number of patients reported freedom from insomnia which they attributed to freedom from pain."[1]

indications: RELA is most beneficial in those conditions of the musculoskeletal system manifesting pain, stiffness and spasm.

safety: Studies of more than 1400 patients indicate that the toxicity of RELA is exceptionally low. In human subjects, respiratory, blood pressure or blood chemistry changes and/or renal, hepatic or endocrine dysfunction have not been reported.

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supply: RELA is available as 350 mg., pink, coated tablets in bottles of 30.

1. Kuge, T.: To be published. H-227

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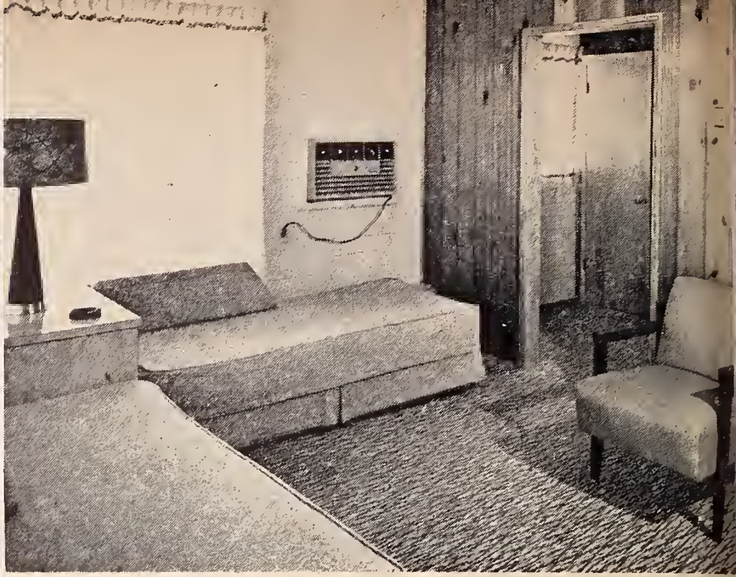

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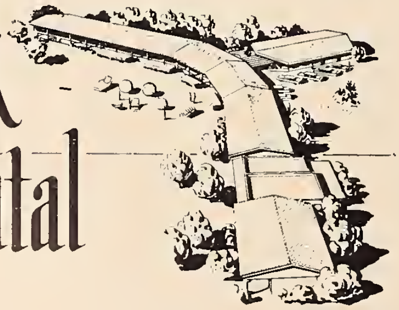

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PARAPLEGIC CARE AND REHABILITATION

The Western Neurosurgical Society held its annual meeting at La Jolla, California, September 28th, 29th, and 30th, and among many interesting presentations was a review of the current status of treatment of the spinal cord injured patient. This was given by Dr. A. Estin Comarr, urologist at the United States Veterans Administration Hospital, Long Beach, California. This treatment and rehabilitation center for paraplegics has established a unique record of results in handling this type of patient. The record is so envious as a matter of fact, that it would seem desirable to make this facility, or similar centers, available to all spinal cord injured patients after the acute phase of the injury has passed. Each of these patients develops problems of urinary tract infection, pressure sores, mass spinal reflexes or pain usually within the first year after injury. Specialized knowledge is required for achievement of the maximum success in solving these problems. Furthermore, the rehabilitation and training of a paraplegic, not only to take care of himself, but to perhaps return in time to a gainful occupation, takes many months and much specialized equipment.

As the situation exists now in the United States, in addition to Veterans Administration rehabilitation centers, there are a few private paraplegic centers which are excellent, but of necessity expensive. Only a few spinal cord injured patients of the many seen over the country each year can afford either private institutional care or the care of a private physician. Actually, the problems become so complex that only a rare physician would feel adequate to handle them all. Whenever a spinal cord injury occurs and the patient survives the acute phase, the questions are asked: "Is the patient a veteran?" "Does he have sufficient funds or insurance, industrial or private, to withstand long term professional and hospital care?" "Was someone else with funds or insurance responsible for the accident?"

If none of these criteria are met, and in the vast majority of cases they are not, a sad situation develops. Interest in the patient and his recurring problems wanes with the passage of time, and as mentioned previously, no one physician feels capable of handling all of these recurring problems. Thus many salvageable paraplegics are lost in the obscurity of someone's home, confined to bed with pressure sores, urinary tract infections, mass spinal reflexes, pain, and a hopeless outlook.

Canada has this problem under control in the Provinces of British Columbia and Ontario. Independent rehabilitation centers have been set up and are used by many agencies, including the Veterans Facilities, on a pay basis. Thus they have become self-supporting and financially dependent patients are not refused.

Insofar as the United States is concerned, the Veterans Administration already has rehabilitation centers with organization, interested personnel and excellent equipment. It would seem sensible and humane to make these facilities available to all paraplegics who desire and need them on a full pay basis if possible, but on partial or no pay basis if necessary.

Only with this concentration of paraplegic patients can well-trained, well-paid and interested professional personnel form the organization necessary to achieve the optimum results in the treatment and rehibilitation of a group of patients with a devastating disease.

Charles W. Elkins, M.D.
Tucson, Arizona

FREE CHOICE OF MD

Even the sometimes cold, impersonal hand of the Tax Court has recognized the fundamental importance of "free choice of physician" to good medical care.

Recently when the court ruled that a taxpayer was allowed to deduct the cost of his travel across the country to see his doctor as a legitimate medical expense, it declared the taxpayer "had confidence in his doctor, and we know of no rule of law that would require him to seek out another physician" nearer his home.

The Tax Court is to be commended for its insight into this important matter.

AMA News

AIR POLLUTION IN ARIZONA?

by Robert D. Smith, Jr. M.A.

Science Instructor: Scottsdale High School

WITH THE onset of the winter season many Arizona cities, and particularly Phoenix, will develop a layer of dirty air containing tons of foreign material. This layer of air will hover over central Arizona until the annual March winds cause a complete dispersal of the problem. This phenomenon will cause much discussion and agitation for corrective action. The reasons for the dramatic and abrupt occurrence of this nuisance is fairly well known. The factors involved follow definite meteorological principles much the same as certain disease syndromes progress in predictable patterns.

Air pollution, or smog as it is known in some areas of the country, is not a new problem. Many centuries of recorded history report numerous instances of severe episodes of air pollution, resulting not infrequently in disasters.

King Edward I and later, Queen Elizabeth, attempted to regulate the nuisance of air pollution by prohibiting the use and sale of sea coal during the months Parliament was in session.

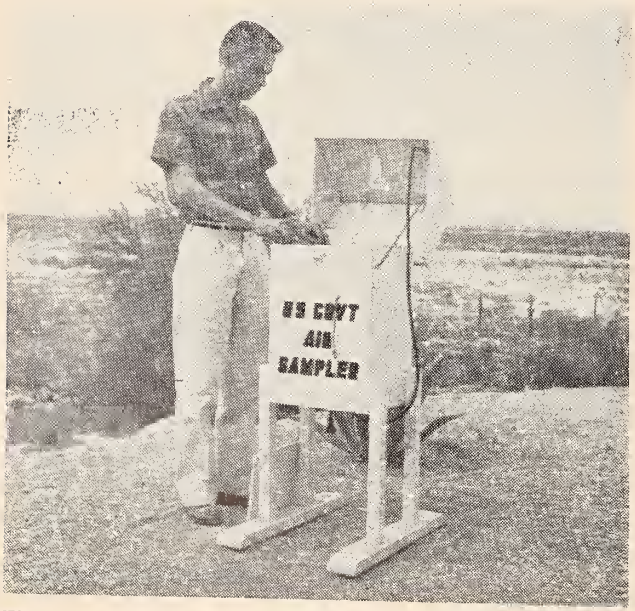

Fig. 1. A government air sampler located in northeast Phoenix. Here, the author is changing the porous glass filter. Air is drawn down through the louvered top and discharged out the bottom. (Photo by W. L. Groene)

The popular opinion that the extensive use of automobiles is mainly to blame for air pollution is not correct. However, this factor, together with the giant industrial movement and new residential developments, easily explains the origin of most foreign substances that enter the atmosphere at ever increasing rates.

The meteorological conditions for air pollution can be assumed to have always existed. The restricted air movement over a relatively small area such as the Los Angeles basin is perhaps the classic situation. All that is required was the addition of large volumes of foreign substances to the air.

In simple terms, air pollution results when substances or contaminants are added to the atmosphere faster than air movement by natural means is able to disperse the particulates. Since there is no practical means at the present time to remove large masses of contaminated air, the problem of air pollution control resolves into regulating the production of air borne foreign substances and the study of atmospheric conditions that "set up" or trigger air pollution.

The composition of our atmosphere is about 75 per cent nitrogen and 23 per cent oxygen, by weight, with the remainder being mostly carbon dioxide and rare gases. To be technical, all of these gases make up about 99.999 per cent of the total weight of the air near the surface of the earth. It is the minute 0.001 per cent that is the cause for alarm in many cities of the world.

Several governmental agencies are now actively engaged in major research projects to determine just what this 0.001 per cent of pollution stemming from man's activities really is. Several cities have employed private consulting meteorologists for an accurate survey of their own city air pollution problems. Briefly, air pollution has now reached the stage of being recognized as an important problem of present day living.

The Public Health Service of the U. S. Department of Health, Education, and Welfare has inaugurated air sampling stations in some 17 communities to obtain very specific data on just what is in the atmosphere. In some three years after these first stations went into service, the number of participating communities grew to over 60 stations. Today, these stations are located in every major city, including Phoenix.

The Air Pollution Act was passed by Congress in 1955, giving the Public Health Service the responsibility of advising individual states and permitting it to do research on the problem. An air sampling network on a national scale was established in early 1957. The core of this new network was 117 sampling sites, 66 of which are located in large cities and 51 in non-urban sites. This was so designed to have at least one non-urban and one urban site operation in every state.

Samples are taken about once every two weeks at each operating station. At first, one would suppose that this is not enough sampling, but several tests have shown that this is a statistically sound way to collect samples. Even with these limited operating schedules, about 4,500 samples obtained per year.

The machine or apparatus used to sample the air operates much like the common household vacuum cleaner. It is located in a special shelter at a standardized height of less than 50 feet. In a given 24 hour period, about 70,000 cubic feet of air is passed through a pure and inert glass fibered filter. Almost all solid and liquified particles larger than 0.3 microns (one micron is about 1/25,000 of an inch) are trapped by this filter as the air is drawn through it. The reader may wonder why the sampling apparatus is located below a 50 foot maximum height. The reason is quite clear: it is in this lower 50 foot height that the majority of man's activities occur and it is also the area of maximum air contamination.

Upon the termination of a pre-arranged 24 hour period of operation, the sample is removed from the apparatus and forwarded to an area laboratory. At the laboratory, the sample is very accurately weighed to determine the gross pollution load or pickup. After weighing, it is then cut into sections, each piece subjected to a different and specialized analysis of the load.

The list of substances collected by the filter is most impressive as each city or community contributes a special type of load.

Each of the items found by analysis plays a significant part in the whole air pollution picture. Some of the organic pollutants can and do cause irritation of animal tissue and under conditions are believed to be a causative factor for cancer. Many of the sulfates and nitrates produced by the various industries cause corrosion and deterioration of durable property and equipment.

Solid precipitates are more readily identified and investigated. The study and influence of deleterious gases is much more involved and difficult. At the present time the pollutant gases are not generally measured as there is no low cost method suitable for use in a large scale sampling program.

The results of widespread air sampling indicate that each city appears to have its own peculiar variety of air pollution unlike that of any other city. Thus each city has its own "fingerprint" of pollution by which to identify itself. It is also a generally accepted fact that there is a certain minimal amount of suspended matter in the atmosphere at all times. This certain amount is caused by nature (dust storms, volcanic ash, etc.) and not by man. Finally, the amount of air pollution is directly related to population density and the amount of industrial development.

Future articles will discuss the meteorological, economic and legislative aspects of the problem.

CANCER CURRENT LITERATURE INDEX

A comprehensive up-to-date guide to the world's medical literature in the field of cancer – approximately 4500 bibliographical references a year. Published for the American Cancer Society, Inc. by the Excerpta Medica Foundation, New York Academy of Medicine Building, 2 East 103 Street, New York 29, N. Y. $7.50 a year.

ARIZONA DIVISION OF AMERICAN CANCER SOCIETY

ACS DISTRIBUTES SETS OF PHOTOMICROGRAPHS ON EXFOLIATIVE CYTOLOGY OF THE FEMALE GENITAL TRACT

A NUMBER of sets of 100 photomicrographs on exfoliative cytology of the female genital tract, each with a syllabus, are now being distributed to cancer coordinators in medical schools and to Divisions. The material was prepared by Dr. Leopold Koss, Director of Cytology at Sloan-Kettering Institute for Cancer Research, assisted by Grace R. Durfee, Chief Cytotechnologist, and was made possible by a grant from the Harry M. Lasker Memorial Fund.

The set is designed to serve as a teaching aid. The photographs were taken from the files of the Cytology Laboratory, at Memorial Center (New York), and represent actual cases seen and diagnosed in the laboratory. The syllabus contains legends for the interpretation of the photomicrographs, and also includes discussions of the various methods of early diagnosis of genital cancer in the female, technical principles and procedures of exfoliative cytology, methods of reporting material and of doing confirmatory biopsies and investigative procedures following cytologic study of smears.

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Reprints

EXAMPLES OF THE INSPIRING CHALLENGE TO MEDICINE IN LITERATURE THROUGH THE AGES

James Barrett Brown, M. D.
St. Louis, Missouri

WE IN medicine have a heritage coming down to us through the ages, from the widespread interest in writing about, and talking about, medicine and its problems. This can be taken as an inspiring challenge in our work. We know that there can never be perfection, and many feel about our patients as Marcus Aurelius did about his people, in that he could not give them what they deserved, or what he would like them to have. But he gave his life in trying, and left us part of our heritage from nonmedical sources.

For these reasons, it seemed worth while to look further into our situation, from the standpoint of what others may think of us, and write about us, in the pursuit of the ever-popular, and ever-present, subject of medicine and *the health of the individual.* Health problems, along with truth, as Socrates said, belong to everyone; and it is the public's right, and the right of literature, to present these problems for discussion — sometimes for condemnation, but more frequently for praise of our profession. Such public and literary discussions may serve us as sources in finding what we might mean to the public, and what we might be able to do, if we would concentrate on precepts that we were inspired with in our decision to follow this profession, and to which we hope to remain dedicated.

John Buchan, the author, who became Lord Tweedsmuir, Governor General of Canada, in his writing, contributes compliment and encouragement to the *individual,* and he has acute ability to suggest forthright endeavor in one's life. He has summed this up in one sentence: "You do not set up a mark to miss it." This is certainly an acceptable precept for surgery.

The trend of the general public and of literature is to hope, and suggest, that the man in medicine does as nearly perfect as is possible. To repeat, I believe this can be taken as a heritage and as an inspiring challenge.

It is true that there are deviations from this theme and much antipathy to medicine and to doctors, but all of literature does not contain any more of these elements than appear in our own discussions, in our efforts to see that the best precepts are carried out by all concerned. We may learn, from each of these authors, items of help for us in our way of life. George Bernard Shaw, in "The Doctor's Dilemma," showed us the long-winded doctor, who was so boring in his speech and action that every one at a party was lulled to sleep by his incessant talk, and finally he himself succumbed to his own eloquence and dropped off, sound asleep, in the middle of one of his own speeches. Molicre occupied himself, at length, in criticism of doctors.

Extreme interest in medicine runs throughout literature. For my part, having grown up a block from Mark Twain's home in Hannibal, it is natural to turn to Mark Twain. I was much saddened as a boy by the immense medical situation of poor young Dr. Robinson's having to open a grave, on the hill south of Hannibal, to extract the body of Hoss Williams so that he could better prepare himself for his task, and best serve his patients. He had hired Injun Joe and Muff Potter to go to the graveyard with him, and on this same night Huck Finn and Tom Sawyer happened to be there, for another medical reason, that of getting rid of warts. The boys, near the grave, looking for "spunk water," saw the eerie three approaching. After the body was out of the grave, Muff Potter, who was drunk as usual, held up Dr. Robinson for more pay and, as Muff had a knife in his hand, Dr. Robinson became frightened and hit him over the head with a grave board. During this scuffle, Muff dropped the knife and Injun Joe

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From the Department of Surgery, Washington University Medical School.

President's address delivered at the 66th Annual Meeting of the Western Surgical Association, Rochester, Minn., Nov. 20, 1958.

grabbed it up and killed Dr. Robinson and then planted the knife on Muff Potter. Muff was exonerated only after a long, hard decision on part of the boys, who feared Injun Joe's retaliation; however, Tom finally came through in the court scene, in which Injun Joe crashed through the window and escaped. Injun Joe was later located, dead, in the cave after it had been locked up, following the rescue of Tom and Becky Thatcher from it. This incident in this book meant a great deal to me as a boy, and it still does, because it expresses sympathy for the medical profession. It occurs as one of the most dramatic episodes in what Ernest Hemingway has called the classic American novel.

Tom's Aunt Polly was addicted to patent medicines, cramming them down Tom on every occasion, and one especially attractive pain killer that she dosed him with almost burnt him up. Soon thereafter the cat came fooling around Tom and the pain killer. Tom told the cat not to ask for any of the pain killer if he didn't really want it, but that if he really *did* want it he could have some. He carefully poured a dose into the begging cat's mouth, and the ensuing scene was one of destruction of the room. When Aunt Polly returned, she wanted to know what had happened to the house and the cat, and Tom said he had given the cat some pain killer, "because he had asked for it," and "because the cat didn't have any aunt to give it to him." Here, again, we see the ever-present idea of health and medication, and of manipulation of the human being for relief of discomfort.

Still another medical situation in "Tom Sawyer" is that of the schoolmaster who had been thwarted in his great desire to study medicine. The secret book that he read interminably in school, to the great amazement and inquisitiveness of the students, turned out to be a florid copy of anatomy, as Tom and Becky found out when she, unfortunately, tore one of the pages.

"Huckleberry Finn" uses smallpox as an excuse to keep two men, in a skiff, away from the raft where Huck has Negro Jim hidden, by suggesting that his deathly sick father is on the raft and needs help. They themselves assumed that Huck's father had smallpox; so, rather than risk exposure, they each put a $20 gold piece on a log, floated it down to Huck, and then went on without offering to help.

In contrast, the doctor, when Tom is shot in the leg, cares for the boy throughout the night on the same raft. We remember, too, that Jim will not run off, although this is his chance for freedom, but stays to help the doctor with Tom. It is pleasing to see the doctor's position in the book again, when he proves his moral courage in his defense of the Negro Jim from the crowd that had gathered to do him harm. The doctor is beautifully illustrated by Kemble as being the ideal type of person one *would* go to for help. It is apparent that the author picked out the medical profession to exhibit kindness, fairness, work, and willingness to help a stricken person. The self-sacrifice involved in risks taken daily by medical men has not been more touchingly presented in American literature. It is sad that the schools of New York City have ruled out "Huckleberry Finn" from their libraries. No child shall be allowed to read it because the word "nigga" is in it, even though a Negro is the hero of the book. The perversions of literature still may be there, but "Huckleberry Finn" is ruled out. Many parents in New York probably will suggest that their children *do* read "Huckleberry Finn," so that this fair and honest and early evaluation of the situation may not be lost to them in their considerations.

"Life on the Mississippi" portrays the dramatic medical situation of Henry Clemens, Mark's brother, being burned to death in a steamboat explosion. The illustration showing Mark Twain in the hospital with his brother dying in front of him shows deep interest in the subject of burns. In the first edition of this book, on page 441, Mark Twain has his *own* image in the center of a group of flames. These flames are supposed to be the ultimate for Mark Twain, as they are hell-fire itself. A further interesting point is that in the second printing this illustration has been deleted, at the request of Mark Twain's wife, as she thought the illustration of the death of one member of the family from fire was enough.

Shakespeare is full of blood and thunder, but he also shows that the mental and bodily health of persons is of deep concern to him. The passage of Portia advising Shylock to "have by some surgeon, Shylock, on your charge, To stop his wounds, lest he do bleed to death," is perhaps the best known, and has the direct suggestion that a surgeon *would* be of benefit. It would have been good medicine to have had a Portia to help out with the phychiatric problems in "Hamlet."

The prevention of heart attack is described in "The Tempest," and has been beautifully illustrated in the Charles Lamb edition. Miranda thinks her dear lover, Ferdinand, is overtaxing his heart in carrying wood for the fire, and she offers to carry it, saying, "Alas, do not work so hard; pray rest yourself." Whereas there is comedy in this situation, there is still interest in medicine, besides which Miranda is giving good medical advice.

Since these medical elements have such intense interests, we might learn to use it to develop our public relations. In any event, we can accept these challenges that come to us as a heritage and can try to profit by them in our life's work.

Injuries of wars, of frontiers, of industry and traffic, and of the home, are with the populace throughout their lives. If we change mass into energy if we have shooting wars, some one is going to get hurt, and some group needs to be there to help. For the frontier, we can go to the works of Alfred Henry Lewis, of early Arizona; these are illustrated by Frederick Remington, the first of which is on the cover of "Wolfville," wherein Texas Thompson is dispatching two or the undesirables with a gun in each hand. Depicted a little less dramatically, but forcefully, "a helpless short-horn stops both heels of a jackass in his mid-section." In these stories of "Wolfville," a leading citizen is Doc Petes; he is said to be the best-educated man in Arizona. He is looked up to for all sorts of good deeds, public effort, his surgery, his medicine, and for attending the birth of one baby in "Wolfville." A good example of a very brief operative report is that of the amputation of a horse thief's shattered leg, at the end of the story — "and humming a roundelay, Doc Petes cut merrily into the wounded member." In these tales of the old Southwest, medicine and surgery, in concept and in appreciation, are at the top of endeavor.

Items of medical interest occur back in antiquity, and from them may be learned important traits of character and of development, which still can be applied. For example, Democritus, about 400 B. C., was the first to use the word "atom" and used in its correct meaning of the time as something that could not be divided, or "without cutting." This laid the foundation for the concept of the elements, although its acceptance was delayed for about 2,000 years by Aristotle and his devoted followers, who stuck to his four elements only, of Earth, Air, Fire, and Water. Many must have questioned the work of Aristotle, but his influence could not be broken until the time of Galileo, Leeuwenhoek, Newton, and Gassendi, with their simple basis of theory and experiment. This situation has direct relation at present to all study and research, in that excessive pedantry, and inability to go forward or to avoid slotted information that can never be changed, may be taken as warnings to concepts in medicine. There need to be some persons who are allowed the most complete freedom to think, to foresee, and to experiment, in order to make advancements. A tremendous influence in one field may militate against acceptance of teamwork and of help from other fields that apply to the same problems. We in surgery, where the moment of actual work becomes so technical and personal, well realize that we must utilize the investigative work of others to give the most benefit to the individual patient.

As surgeons, we need to search for helpful adjuncts as much as anyone in medicine, because what happens to our patients is what we have done for them ourselves, not something delivered from a drugstore, or fought out along familial lines, or against some mental aberration. We are responsible as individuals for what we do for our patients, and we need the results of experimentation and the acceptance of help from other fields. Such help was often lacking during our own Civil War. At that time a surgeon, who was an authority on amputations, performed a large series in which the technique was perfect but, unfortunately, the patients all died of tetanus. Really good surgical results had to wait for bacteriology and immunology. I hope I may be excused for mentioning the results of cooperation of services in my own Army experience, in which there were no deaths in over 30,000 operations. The reason for this was that we used all the adjuncts and teamwork possible of anesthesia, medicine, radiology, laboratory, and other branches of medicine, working together to give the best to the patient. We know these facts from our own medical lore and literature, and we can find analogies in the general literature down through the ages.

In the Civil War literature by modern authors, again, we find acceptance of medical importance. A dramatic instance occurs in Shelby Foote's "Shiloh," where he describes the death of Gen. Albert Sidney Johnston. Dr. Yandell, his surgeon, argued against taking time to care for the fallen Northern soldier, but General Johnston cut him off with, "These men were our enemies a moment ago; they are our prisoners now. Take care of them." The sad thing about this is that General Johnston bled to death, just a little later, from a neglected wound from which he would have been saved if Dr. Yandell had not been caring for their prisoners. The needless loss of General Johnston was an extreme blow, and even more to Robert E. Lee was the loss of Stonewall Jackson, as recorded by Douglas Freeman. We remember that Jackson was shot, by mistake, by his own men. Dr. McGuire removed the arm, but the General died. This important medical situation has left us the beautiful final words of General Jackson: "Let us pass over the river and rest under the shade of the trees." When General Lee was told that General Jackson had lost his left arm, General Lee's comment was that, while Jackson had lost his left arm, he, Lee, had lost his right arm and he wished he could have been in General Jackson's place. These situations have nothing to do with sectionalism, but they point out, again, that we are the heritors of a tremendous feeling to hope for help from us on the part of the people of the world and of the authors that record their lives and their activities.

From ancient writings we may find instances of mistakes in interpretation and actual changes in concept of what the original authors intended. The popular idea concerning Epicurus' philosophy is a prime example of distortion of original intent. His philosophy is usually interpreted as being intent on pleasure. The truth is that his pleasure was to be solely the lack of pain, to have peace of mind, or "ataraxis," as it was known so early in the world's history. He lived simply and frugally, did not stuff himself with food, and laid down rules of conduct with elements that could be followed today, to the world's advantage. His ideas of propagation of the race are not in accord with ours, but one seldom finds a book or a treatise in which every idea is acceptable. Epicurus was so much the devotee of *not* having pain that it would seem that somewhere in the field of anesthesiology the name of Epicurus should be included. He was generally, and finally, against pain and taught that being without pain produced the most pleasure in life. Epicurus was not the Epicurean of popular idea.

Epicurus, also, was one of the first to back Democritus on his atomic theory. He could not go along with the idea of the exact sameness of all atoms, however; and even back in that day of antiquity he maintained that there was some deviation of atoms in their constant activity. It is of great interest that now, in our own day, in 1957, a Nobel prize has been given for the finding that certain mesons of the atom *do* show deviation of movement. These things need not make each of us to feel that we cannot count on accumulated knowledge; but they do indicate that we can continue to experiment and prove, and show concern for facts which are not finally determined for us, and to keep open minds for improvement in our knowledge of the elements of our profession. One might even conjecture that, with the transmutation of the elements, Aristotle might be proved right with his Earth, Air, Fire, and Water, after all.

Lucretius, in "On the Nature of Things," is the one who gives us the data of Epicurus. Presumably, Epicurus *had* produced his own work but it did not survive, other than in this long poem of Lucretius. It is so long, and there are so many quasi statements and such lack of scientific observation, which, incidentally, was impossible in their time, that one tends to reject such works. Still it is apparent that we can gain a philosophical outlook concerning medicine from many places in the literature of the ages.

The "old philosopher" Lao-tze, born in 604 B. C., in "The Way of Life," suggests many things of value to medical concepts. He taught for a large number of years, but did not put anything down, since, in the words of Bynner, he had "decided that a great deal was done and said in the world which might better be spared." He believed in what has been called "creative quietism." He thought that a man could be a doer without being an actor. He was aware of the dangers inherent in dogma. He laid down no rigid laws for behavior other than that he thought men's conduct should depend on their instinct and conscience. He was saddened by men's tragic perversity and their indispotion to accept "The way of life." Lao-tze's philosophy of creative quietism, depending mainly on patience, forbearance, and fortitude, is so simple as to appear somewhat mystic, but nothing could have been farther from the thought of Lao-tze than to start a religion. The religion that followed this philosophy was a marked distortion of this simple precept; as Bynner says: "Men love to turn the simplest and most human of their species into complex and superhuman beings; thus everywhere men yearn to be mislead by magicians; thus cults in all lands under virtuous guise make of ethics a craft and a business."

As early as the sixth century B. C. Lao-tze said: "Can your learned head take leaven from the wisdom of your heart?" In this he suggests that the head *did* have the most to do with mind, and thought, as far as actions are concerned, and this was at a time when the seat of the mind was thought to be within the breast. Lato-tze did not know what cancer was, but a small part of his philosophy suggests the best that can be utilized, at present, for cancer. He stated: "Men knowing the way of life face the simple fact before it becomes involved." "Solve the small problem before it becomes big." "The most involved fact in the world could have been faced when it was simple." "The biggest problem in the world could have been solved when it was small."

"A Doctor of the Old School," by Ian McClaren, contains dramatic praise of the medical profession. Alexander Woolcott has called this the finest descriptive and character writing in English. Among other things, it combines the value of cooperation between the general practitioner and the surgical specialist.

It concerns Dr. William Maclure, who practiced in Drumtochty, Scotland. A single horse could not do the work of this man, but he liked best his old white mare, called "Jess," who must have returned his liking, because she died a week after the doctor. He could ride faster and stay longer in the saddle than anyone in the parish, and it was all for mercy's sake. When Annie Mitchell was dying under his care, he called for help from Sir George, the Queen's surgeon, and had to drive him through the flooded Tochty River with great discomfort and danger. With the black waters racing all around the dogcart, Sir George's nerves were shaken, and he ordered Maclure to turn back, as he "would not allow himself to be drowned for any person." "Sit down," thundered Maclure, "Condemned ye will be sooner or later, if you shirk your duty, but through the water you are going today"; and Maclure prevailed. Annie Mitchell was saved by the surgical specialist out in this inaccessible mountain parish. Sir George would accept no pay, as he knew Dr. Maclure was going into his own pocket for the fee. As his returning train moved out, Sir George said: "Give us another shake of your hand, Maclure. I am proud to have met you; you are an honor to our profession. Look after Annie and mind the antiseptic dressings."

I shall ask the privilege of a personal insert here in relation to this very wonderful character in the old Scotland. My wife has a native Scot nephew who graduated at Edinburgh and who wanted to take care of families on the west coast of Scotland for the rest of his life, in some such manner as Dr. Maclure. Sadly and unfortunately, because of the National Medical Service, this young man was not allowed to inject this much personality and individuality into his work. He found that he could not stand the thought of this authoritarian life in his beloved country, and so he migrated to Western Canada for his life's work. I believe such instances are great losses to Scotland, and to the United Kingdom.

In such search as this for sources, one would naturally like to find some of the basic thought processes of the great names in scientific research. Although we may not know specifically of the work of those in other fields, we may try to understand *how* they think, and possibly find some application to our own problems. We, also, would find that it does take a real genius for great advancement, but we can learn from such persons how men of genius work. At the same time, it is found that a genius is a normal person except for the peculiar powers of reason which account for the great elements of progress.

Concerning research, Einstein has said: "Scientific research can reduce superstition by encouraging people to think and survey things in terms of cause and effect. Certain it is that a conviction, akin to religious feeling, of the rationality or intelligibility of the world lies behind all scientific work of a higher order." It is interesting to see the genius of Einstein in his deep appreciation of others' contributions. For example, concerning Newton, he said: "It is just two hundred years ago that Newton closed his eyes. It behooves us at such a moment to remember this brilliant genius who determined the course of Western thought, research and practice, to the extent that nobody before or since his time can touch."

Considerations of mental and physical health are often found in unexpected places. I would like to repeat a short sentence of Longfellow's, which my mother had framed for me many years ago for my own room. Longfellow said, "If we could read the secret history of our enemies, we would find in each man's life sorrow and suffering enough to disarm all hostility." Here, again, is the theme of the human being suffering. It is uppermost in his mind through most of his life, and someone must be on hand to help.

As previously noted, all is not serious about the public's and literature's recognition of the medical profession. In "Tristram Shandy," written by Laurence Sterne, there are many medical situations, perhaps climaxed by Dr. Slop, in his curse that was nine pages long, directed at Obeideah, his servant. This was occasioned by Obeidah's having gone by horseback to get instruments for a delivery, but, having tied them so securely in the saddlebags, and having then galloped so furiously that the knot was pulled tight, Dr. Slop could not get it undone in time for the baby, and in the process cut his thumb "quite across to the very bone." None others have equalled this nine-page oath, although some may have been trying; but it is hoped that this will *not* be considered a challenge of literature.

Stephen Leacock, in "How to Be a Doctor," says:

> What I want to speak about is the progress of medicine. There, if you like, is something wonderful. Just think of it, a hundred years ago there were no bacilli, no ptomaine poisoning, no diphtheria, no appendicitis. Rabies was but little known and only imperfectly developed.
>
> Or consider the advance of science on its practical side. A hundred years ago it used to be supposed that a fever could be cured by the letting of blood; now we know positively it can not. Even seventy years ago it was thought that a fever was curable by the administration of sedative drugs; now we know that it isn't. For the matter of that, as recently as thirty years ago, doctors thought that they could heal a fever by means of low diet and the application of ice; now they are absolutely certain that they can not. This instance shows a steady progress made in the treatment of fever.
>
> In only one respect has there been a decided lack of progress in the domain of medicine. That is in the time it takes to become a qualified practitioner. In the good old days a man was turned out thoroughly equipped after putting in two winter seasons at a college, and spending his summers in running logs for a sawmill. Now it takes anywhere from five to eight years to become a doctor. Of course, one is willing to grant that our young men are growing more stupid and lazier every year. This fact will be corroborated at once by any man over forty years of age, but even when this is so, it seems odd that a man should require eight years now to learn what he used to acquire in eight months.

Leacock has a few more quips about diet, biopsies, and analytical laboratory work, and refers to Apollinaris and Scotch several times; but he goes on to say:

> And yet, isn't it funny you and I and the rest of us, even if we know all of this about doctors, as soon as we have a pain within, rush for a doctor as fast as a hack can take us.

In this typical Leacock fashion, we find a summary of what we are talking about — that the people do have aches and pains and catastrophies and sadness, and they seek relief somewhere. These needs, these yearnings are the heritage of the medical profession. If we can convince the public that we feel that their troubles are a challenge and real concern to us, perhaps many of our difficulties may be made easier.

Medical advancement is somewhat like the dawn around the world, always occurring, every minute of the day, with slow but steady progress. There are occasional cataclysmic discoveries from training in observation, or by serendipity, and always there is our need and desire to "observe and record for mankind." Perhaps this literary heritage, this widespread interest in medicine, observed in the literature of the ages, can show us the true value of faith and spirit in our work, and thus be an inspiring challenge to our profession.

"WARNING TO AMERICAN PHYSICIANS

"Personal Experience with Socialized Medicine by

Jacobus H. Verhave, M.D.

Portales, New Mexico

Practicing Physician in Amsterdam, Netherlands, 1925 to 1948

THERE are two systems of Socialized Medicine, which are essentially the same. Time is the only factor that distinguishes these. The systems are:

"1. *Immediately identifiable Socialized Medicine,* authorized by legislature, with establishment of public institutions and bringing into effect laws controlling the practice of Socialized Medicine. This occurred in Great Britain.

"2. *Disguised Socialized Medicine,* supported by legal regulations. Disguised Socialized Medicine is masked by a complicated chain of a mutually dependent network of seemingly private committees and insurance companies. In the case of Disguised Socialized Medicine the administration and execution of these social medical laws is transferred to these organizations, which then posses legal status.

"This type of step by step transition occurred in the Netherlands. It is obvious that Disguised Socialized Medicine is better adapted to delude the medical profession than is Identifiable Socialized Medicine.

"For many years I gained experience with the *concealed, gradual enforcement* of Socialized Medicine in the Netherlands. I propose to discuss Disguised Socialized Medicine in the Netherlands.

"HUMANITARAN RESPONSIBILITY OF THE MEDICAL PROFESSION IS EXPLOITED BY THE LAWMAKERS.

"Around the turn of the century in the Netherlands there existed the so-called 'Physician-Funds' founded and conducted by private physicians. Guided by humanitarian instincts, they provided medical care to low income groups for a negligible weekly premium. These private institutions, scattered over the country, did not have any mutual relationship. Gradually they were taken over and incorporated by private insurance companies. Many unsuspecting physicians were pleased, because their administrative burden was removed. Up to the time of the German occupation of the Netherlands, the income from private practice was in general greater than the income paid by the insurance companies. The Nazi regime imposed compulsory SocializedMedicine a short time after their arrival in the Netherlands, however in a rather limited degree. After the liberation the successive socialistic governments maintained all these regulations concerning Socialized Medicine, gradually increasing its spectrum. At first every employee and his family, earning less than 2500 guilders ($700) was compelled to register for medical care. The premium was withheld from the wages, and at the same time a premium paid by the employer was added. After a short time the income limit was increased to 3400 guilders ($900) and step by step, from year to year the limit of compulsory insurance was raised and is now 6900 guilders ($1800). However the last socialistic government planned to increase the limit further. Entire groups of employees, sailors, officials and the aged were added to this insured category piecemeal, but never at the same time. At the present about 95% of the population is compelled to accept Socailized Medicine by this subtle, indirect mechanism.

"COMPROMISE OF THE QUALITY OF MEDICAL CARE UNDER SOCIALIZED MEDICINE.

"Under Socialized Medicine the unlimited availability of medical care, treatment, and preventive medicine entails overcrowded waiting rooms and waiting lists for non-emergency hospital treatment. An average of only a few minutes is available for the patient. There is no time for a skillfully directed history and an adequate examination. Under this system a conscientious physician will attempt to salvage his responsibility by referring serious cases to a specialist. Because of this, the office hours of the specialist shows a similar picture. A as result of this situation the aforementioned committees have compelled the physician to refer to no more than the average referring rate of the area of their jurisdiction, at the risk of a financial penalty subtracted from his professional insurance income. The rising cost of drugs and diagnostic procedures requires a continuing increase of premium payments. However, this method can never compensate for the deficit. Another semi-official committee is appointed to arbitrarily compose a list of drugs which the physician must choose from. This committee also specifies how much of any drug a physician may prescribe in his treatment of patients. A drug not mentioned in this list cannot ordinarily be prescribed, even if the patient is willing to pay for it. Infringement of this rule is punishable by subtracting the cost of the drug from the physician's income. Another rule is, if the average cost of prescriptions of a physician is over 10% of the average cost of prescriptions in the area, this excess shall be subtracted from his income. A host of officials and their offices is needed to calculate this material. The committees and insurance companies maintain the fiction, that every drug deemed necessary by the physician can be prescribed. To preserve the fiction of this system another committee is appointed to evaluate requests for prescriptions of unlisted drugs. Because these committees meet usually once a week, most physicians refrain from the red tape of such detailed written documentation. Every Dutch physician swears before obtaining his license, that he will practice medicine to the best of his ability and knowledge. Thus he is in continual conflict with his professional and moral conscience.

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*Reprinted from Association of American Physicians and Surgeons, Inc. Bulletin No. 16-59, Index No. 25.

"DANGERS OF SOCIALIZED MEDICINE TO THE PHYSICIAN.

"The insufficient time available for each patient inevitably leads to only the treatment of symptoms, so that a truly serious illness is recognized too late. In order to earn a living a physician is forced to treat an excessive amount of patients, on a *quantity* rather than a *quality* basis. A fixed sum is quarterly paid for each patient. Each patient obtains the right of unlimited house and office calls. Because the great majority of cases seen are of non-serious character, there is a tendency to see each complaint as a trivial or temporary ailment. Most Dutch physicians, therefore, have the unsatisfactory feeling, that they are handicapped in the performance of their duties. Attempts by the physician to limit the number of house and office calls, by paying a very small fee for each visit, by the patient, (so-called 'ticket moderateur' or 'limiting ticket') have failed, because these rights, given to the patient by the law, can not be compromised.

"WARNING TO THE MEDICAL PROFESSION.

"Because I have practiced medicine under the socialized system existing in the Netherlands, and because I am now practicing in the United States of America, under our present system of private initiative, I feel it my moral duty to make known my enforced knowledge of this subject. The insidious step by step, intrusion of Socialized Medicine into our private practice causes less resistance on our part than the abrupt transition which occurred in England. I am convinced that, if the individual American physician becomes aware of these disguised dangers, he will resist the intrusion of Socialized Medicine by all available means. The unity shown by Dutch physicians during the German occupation, against the compulsory Nazi physicians' organization proves that even a reckless enemy cannot force his will on a united medical power. Unfortunately the disunity created among Dutch physicians, particularly among their leaders, concerning the introduction of social medical laws after the liberation, has caused a situation from which one can only escape by immigration. In this country the only limitations to the practice of superior medicine is the extent of the physician's knowledge, training and conscience. I think it is desirable that other foreign physicians, established in the United States of America, publicize their experience with Socialized Medicine, so that every American physician may become aware of the threatening dangers of the future.

"Previous experience makes me grateful and proud to be privileged to practice medicine as we know it in America today. I trust, it will not be again a case of 'too little and too late.'

'Un homme averti en vaut deux'

"July 10, 1959
112 East 4th St.
Portales, New Mexico"

We hope that Dr. Verhave's firsthand experience will inspire ethical physicians throughout the land to grab the initiative and work courageously to preserve private practice by leading from their great strength: (a) Only a physician can practice medicine; (b) non-participation in any plan for the distribution of medical care which is inimical to the best interest of the patient and physician alike.

Sincerely,

LOUIS S. WEGRYN, M.D.,
President

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Hospital and home calls made at your request.

Expert fitters, private fitting rooms.

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STATISTICAL STUDY

THE LARGEST medical statistical study ever attempted in America was launched this fall to discover why some people may be more likely to get cancer than others.

This and other questions will be answered in an American Cancer Society study involving more than 1,000,000 Americans. This is the first such large scale family prospective study ever undertaken. The project, which will take six years to complete, wil be conducted with the assistance of 50,000 trained volunteers, it was announced by Dr. Eugene P. Pendergrass, American Cancer Society President. If volunteers were not available to handle the field work, the project would cost many millions of dollars.

The study, under direction of Dr. E. Cuyler Hammond, American Cancer Society Director of Statistical Research, also will probe the effect of environment on cancer and will attempt to learn more about symptoms of the disease to help improve early detection.

Dr. Hammond said that the information to be obtained is designed to test many theories about the cause of cancer as well as to clarify certain known facts about the disease.

Some of these include: occupational hazards in relation to cancer; whether or not a tendency toward cancer is more prevalent in some families; what relationships exist between cancer and other diseases; whether frequency and other factors of childbirth are associated with cancer; how much relationship there is between failure to breast feed a child and the occurrence of breast cancer in mothers; possible relationship between menstrual disorders and uterine cancer or between circumcision and the occurrence of cancer; any relationship between diet, food, beverages and cancer; how effective cigarette filters may be in relation to lung cancer and whether inhaling cigarettes is a factor; how air pollution may be related to cancer; whether or not one's standard of living has anything to do with his getting cancer.

Another major objective of the study is to find out what percentage of the public has undiagnosed cancer. Also investigators would like to know whether those who have cancer have had certain symptoms or think they have had them, or whether they have developed the disease without any apparent symptoms.

The study also should disclose how frequently the patient may be responsible for delay in seeking diagnosis and treatment.

Dr. Hammond said one of the most valuable products of the study would be knowledge that they could forewarn certain persons that they are more likely to fall prey to cancer.

He said, "Suppose that we should find that cancer incidence rates are especially high among certain groups of people, we should then advise such people to have frequent medical examinations, so as to improve their chances of being cured if the disease strikes."

"For this purpose," he said, "it is not necessary to know the underlying reason for an association. It is only necessary that we know that such a relationship does exist."

He said the study may yield information of medical importance aside from the problem of cancer although it is designed primarily to obtain information related to the one disease. Analysis will be made of all physical complaints and other factors in relation to all causes of death.

A pilot study in five cities: Harrisburg, Pennsylvania; Cleveland, Ohio; Baltimore, Maryland; Nashville, Tennessee; and Tampa, Florida, has already been conducted to test methods on more than 4,000 persons.

Employing some of the same prospective techniques perfected in the widely acclaimed American Cancer Society Hammond-Horn study of smoking habits, the project will attempt to study 500,000 families with more than 1,000,000 persons who are at least 30 years of age.

The 50,000 volunteer researchers will each select about 10 households which he or she can expect to trace for the following six years. Each family would be reported on annually. In addition to answering an original questionnaire, each subject will be required to fill out forms with supplementary information every two years.

In the event of deah, the cause will be ascertained by American Cancer Society statisticians from the death certificate and medical records. Supplemental information will be obtained from the doctor who signed the death certificate.

Future Medical Meetings and Postgraduate Education

THIRD ANNUAL CARDIAC CONFERENCE

January 29 and 30, 1960
Arizona Biltmore Hotel, Phoenix

ARIZONA HEART ASSOCIATION SYMPOSIUM COMMITTEE
Dr. Robert H. Bullington, Chairman
Dr. Andre J. Bruwer
Dr. C. Thomas Read
Mrs. Pearl P. Coulter, R.N.
Dr. James E. O'Hare
Dr. Matthew Cohen

The Third Annual Cardiac Conference is sponsored by the Arizona Heart Association in cooperation with the American Academy of General Practice, Arizona Chapter, which has approved these sessions for ten hours post-graduate credit under Category One.

PROGRAM

Friday, January 29, 1960

7:30- 9:00	Registration — Lobby Entrance.
9:00	Greeting by Dr. Donald K. Buffmire, Phoenix. President, Arizona Heart Association.
9:15-10:15	"Possible Clinical Applications in Spatial Vectorcardiography" — Dr. George E. Burch, New Orleans.
10:15-10:30	Intermission — Visit Exhibits.
10:30-11:30	"The Surgical Treatment of Acquired Valvular Heart Disease" — Dr. John W. Kirklin, Rochester, Minnesota.
11:30-12:30	"Present Day Management of Hypertension" — Dr. Robert W. Wilkins, Boston.
12:30- 2:00	Luncheon.
2:00- 3:00	"The Modern Treatment of Cerebrovascular Diseases" — Dr. Irving S. Wright, New York City.
3:00- 4:00	Panel Discussion of Current Cardiovascular Problems — Dr. Robert H. Bullington, Phoenix — Moderator. NOTE: All Speakers will participate in Panel Discussion.

Saturday, January 30, 1960

8:00:- 9:30	Continued Registration — Lobby.
9:30	Greeting by Dr. William A. Butcher, Tucson. President-Elect, Arizona Heart Association.
9:45-10:45	"Management of Congestive Heart Failure" — Dr. George E. Burch, New Orleans.
10:45-11:00	Intermission.
11:15-12:15	"Present Status of Surgical Treatment of Tetralogy of Fallot"—Dr. John W. Kirklin, Rochester, Minnesota.
12:15- 2:00	Luncheon.
2:00- 3:00	"Anticholesterolemic Agents and Atherosclerosis" — Dr. Robert W. Wilkins, Boston.
3:00- 4:00	"Progress and Problems in Antocoagulant Therapy" — Dr. Irving S. Wright, New York City.
4:00- 4:15	Intermission.
4:15- 5:00	Panel Discussion of Current Cardiovascular Problems — Dr. Donald K. Buffmire, Phoenix — Moderator.

Note: All speakers will participate in panel discussion.

For further information or registrations, contact: Arizona Heart Association
541 East McDowell Road, Phoenix, Arizona

LADIES ACTIVITIES

Friday, January 29, 1960

11:00 "Ice-Breaker" Coffee — Arizona Biltmore Hotel Lobby
12:30 Poolside Luncheon — Fashion Show — Arizona Biltmore Hotel
7:00- 8:00 Cocktail Party — Semi-Formal — Arizona Biltmore Hotel.
8:00 Dinner — Dancing.

Saturday, January 30, 1960

10:00 Choice of Ladies Activities:
  Golf
  Tennis
  Swimming
AT THE ARIZONA BILTMORE HOTEL
  Trip to Scottsdale
  Sight-seeing
  Shopping
  On-Your-Own
TRANSPORTATION FURNISHED BY WOMEN'S COMMITTEE

CALENDAR OF NATIONAL AND INTERNATIONAL MEETINGS

February, 1960

3-6 — American College of Radiology, Roosevelt Hotel, New Orleans, La.

25-27 — Symposium on Fundamental Cancer Research (14th), M. D. Anderson Hospital & Tumor Institute, University of Texas, Houston, Texas.

March, 1960

13-18 — National Health Council, National Health Forum, Carillon Hotel, Miami Beach, Fla.

15-17 — American Laryngological, Rhinological & Otological Society, Deauville Hotel, Miami Beach, Fla.

17-19 — American Radium Society, Caribe Hilton Hotel, San Juan, Puerto Rico.

18-19 — American Laryngological Association, Deauville Hotel, Miami Beach, Fla.

19-24 — American Academy of General Practice, Philadelphia, Pa.

27-28 — ACS Research Advisory Council, New York City, New York.

27-31 — ACS Science Writers Seminar, New Suburban Hotel, Louisville, Ky.

30 — American Gastroscopic Society, Roosevelt Hotel, New Orleans, La.

31-4/2 — American Gastroenterological Association, Roosevelt Hotel, New Orleans, La.

April, 1960

1-3 American Society of Internal Medicine, Mark Hopkins Hotel, San Francisco, Calif.

3-6 — American Surgical Association, The Greenbrier, White Surphur Springs, West Virginia.

4-9 — American College of Physicians, Mark Hopkins & Fairmont, San Francisco, Calif.

8-10 — (tentative) American Association for Cancer Research, Chicago, Ill.

8-12 — American Dermatological Association, Inc., Boca Raton Hotel, Boca Raton, Fla.

11-15 — Federation of American Societies for Experimental Biology, Conrad Hilton Hotel, Chicago, Ill.

11-15 — American Physiological Society, Chicago, Ill.

20 — ACS Research Committee — New York City, New York.

20-24 — International Congress of Gastroenterology, Leiden, Netherlands.

25-27 — American Proctologic Society, Shamrock Hilton Hotel, Houston, Texas.

28-30 — American Association of Pathologists and Bacteriologists, Hotel Peabody, Memphis, Tenn.

May, 1960

2-6 — American Nurses Association, Miami Beach, Fla.

5-8 — Student American Medical Association, Statler-Hilton Hotel, Los Angeles, Calif.

11-13 — American Association of Genito-Urinary Surgeons, Dearborn Inn, Dearborn, Mich.

11-13 — American Association for Thoracic Surgery, Deauville Hotel, Miami Beach, Fla.

15-18 — International Congress of Surgeons, International Congress, Rome, Italy.

June, 1960

3 — ACS Board of Directors Meeting, Los Angeles, Calif.

5-10 — National Conference on Social Welfare, Atlantic City, N. J.

8-12 — American College of Chest Physicians, Miami Beach, Fla.

13-17 — American Medical Association — Annual Meeting, Miami Beach, Fla.

13-17 — Canadian Medical Association, Banff, Alberta.

13-17 — International Congress of Clinical Pathology, Madrid, Spain.

18-23 — International Congress of Endocrinology, Copenhagen, Denmark.

20 — ACS Research Committee, New York City, New York.

20-21 — Rocky Mountain Cancer Conference, Denver Hilton Hotel, Denver, Colo.

August, 1960

2-5 — International Association of Laryngectomees — Annual Convention, Chase Hotel, St. Louis, Mo.

8-11 — National Medical Association, Inc., Penn-Sheraton Hotel, Pittsburgh, Pa.

24-27 — International Congress of Internal Medicine (Sixth), Basel, Switzerland.

27-9 — American Hospital Association, Civic Auditorium, San Francisco, Calif.

28-9 — International Congress on Diseases of the Chest, Vienna, Austria.

September, 1960

11-15 — International College of Surgeons, Twelfth International Congress, New York City, New York.

13-15 — Fourth National Cancer Conference, Minneapolis, Minn.

22-26 — International Cancer Cytology Conference, Madrid, Spain.

25-30 — College of American Pathologists, Chicago, Ill.

PHOENIX SURGICAL SOCIETY

THE Phoenix Surgical Society cordially extends an invitation to all interested physicians and surgeons to a series of lectures by distinguished speakers.

Dinner and refreshments at 6:30 P.M. Lectures at 8:30 P.M. Mountain Shadows Resort, East Lincoln Drive, Scottsdale, Arizona.

January 12, 1960 — "Chronic Ulcerative Colitis." Dr. Robert T. Tidrick, Professor of Surgery and Chairman of the Department, University of Iowa.

March 8, 1960 — "Surgical Treatment of Duodenal Ulcer — Changing Concepts." Dr. Jack Farris, Professor of Surgery, U.C.L.A.

Dinner $4.65 — by reservation only. For reservations, call or write the undersigned at least four days before each event.

Donald A. Polson, M.D.
Secretary, Phoenix Surgical Society
550 West Thomas Road — CR 4-2081
Phoenix, Arizona.

THE SOUTHWESTERN SURGICAL CONGRESS

THE Twelfth Annual Meeting of The Southwestern Surgical Congress is to be held at the Riviera Hotel in Las Vegas, Nevada, March 28, 29, 30 and 31, 1960.

Reservations are to be made through the Hotel Riviera attention Mr. Elmo Ellsworth. The first 200 reservations will be at the Riviera, the next 200 at the nearby Hotel Sahara, and the remainder at the adjoining Algiers Motel. Assignments will be made in the order received. Each place has a swimming pool and excellent accommodations.

In addition to the usual Las Vegas entertainment, arrangements have been made for a ladies' luncheon (with bingo), golf at the Desert Inn, and tours to Boulder Dam and Lake Mead. The annual banquet will be held in the Riviera's Clover Room. An excellent floor show will be featured.

RADIOLOGICAL CONFERENCE

THE Twelfth Annual Midwinter Radiological Conference, sponsored by the Los Angeles Radiological Society, will be held at the Statler Hotel, Los Angeles, California on Saturday and Sunday, January 30th and 31st, 1960.

An outstanding program of pertinent interest has been arranged and the guest speakers will be: Dr. John A. Evans, New York, New York; Professor Knut Lindblom, Stockholm, Sweden; Dr. James J. Nickson, New York, New York; and Dr. Rohan Williams, London, England.

The conference fee of $20.00 includes two luncheon meetings featuring questions and answers. A banquet ($7.50 per plate) preceded by cocktails will be held Saturday evening. Reservations may be made through: Dr. Sidney D. Zucherman, 3741 Stocker Street, Los Angeles 8, Calif.

Courtesy cards will be available to residents in radiology and radiologists in the Armed Forces by advance registration, with reduced tariff for the luncheons and banquet. Hotel reservations should be made promptly through the Convention Manager, Statler Hotel, Los Angeles, California.

REGIONAL MID-WINTER AND SPRING MEETINGS

January 22-23, 1960
American College of Physicians Regional Meeting
Colorado Springs, Colorado

February 8, 9, 10, 11, 1960
Postgraduate Course in Anesthesiology
Salt Lake City, Utah

March 2, 3, 4, 1960
Postgraduate Course in Obstetrics
Brighton Ski Resort, Utah

March 22-23, 1960
American Academy of General Practice
Utah Chapter
Salt Lake City, Utah

May 12-14, 1960
Nevada Academy of General Practice
Reno, Nevada

May 16-18, 1960
American Ophthalmological Society
Colorado Springs, Colorado

May 18-21, 1960
American Academy of General Practice
New Mexico Chapter
Ruidoso, New Mexico

HAWAII MEDICAL ASSOCIATION

The 104th Annual Meeting of the Hawaii Medical Association, Honolulu, May 12, 13, 14 and 15, 1960.

PARENTERAL ANTIBIOTIC DESCRIBED

Four papers described preliminary studies of a new polypeptide antibiotic, aspartocin, produced by *Streptomyces griseus* var. *spiralis*. In reporting laboratory investigations, Kirsch, Dornbush, and Backus, of Lederle Laboratories, stated that aspartocin possesses activity primarily against gram-positive micro-organisms. Their preliminary studies indicate that the antibiotic is bactericidal in its action against staphylococci. The compound is effective in vitro against bacteria resistant to the tetracyclines, lecuomycin, erythromycin, spiramycin, carbomycin, puromyin, and penicillin.

Redin and McCoy, of Lederle Laboratories, reported the effectiveness of aspartocin against experimentally induced infections in mice. They concluded that when it is administered parenterally, its effectiveness against gram-positive organisms is generally comparable to that of tetracyclines but that it is two to three times as toxic. Aspartocin was found to be inactive orally.

(from Seventh Annual Aantibotic Symposium, Nov. 4-6, 1959, Washington, D. C.)

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tense
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nervous
patient

relief comes fast and comfortably

–does not produce autonomic side reactions
–does not impair mental efficiency, motor control, or normal behavior.

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to relieve pain
and stiffness
in muscles
and joints

indicated in:

- MUSCLE STIFFNESS
- LUMBOSACRAL STRAIN
- SACROILIAC STRAIN
- WHIPLASH INJURY
- BURSITIS
- SPRAINS
- TENOSYNOVITIS
- FIBROSITIS
- FIBROMYOSITIS
- LOW BACK PAIN
- DISC SYNDROME
- SPRAINED BACK
- "TIGHT NECK"
- TRAUMATIC STRAINS AND BRUISES
- POSTOPERATIVE MYALGIA

■ Exhibits unusual analgesic properties, different from those of any other drug ■ Specific and superior in relief of SOMAtic pain ■ Modifies central perception of pain without abolishing natural defense reflexes ■ Relaxes abnormal tension of skeletal muscle

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N-isopropyl-2-methyl-2-propyl-1, 3-propanediol dicarbamate

■ More specific than salicylates ■ Less drastic than steroids

■ More effective than muscle relaxants

SOMA has an unique analgesic action. It apparently modifies central pain perception without abolishing peripheral pain reflexes. SOMA is particularly effective in relieving joint pain. Patients say that they feel better and sleep better with SOMA than with previously used analgesic, sedative or relaxant drugs.
SOMA also relaxes muscle hypertonia, with its stresses on related joints, ligaments and skeletal structures.

ACTS FAST. Pain-relieving and relaxant effects start in 30 minutes and last 6 hours.

NOTABLY SAFE. Toxicity of SOMA is extremely low. No effects on liver, endocrine system, blood pressure, blood picture or urine have been reported. Some patients may become sleepy, particularly on high dosage.

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SUPPLIED: Bottles of 50 white coated 350 mg. tablets.
Literature and samples on request.

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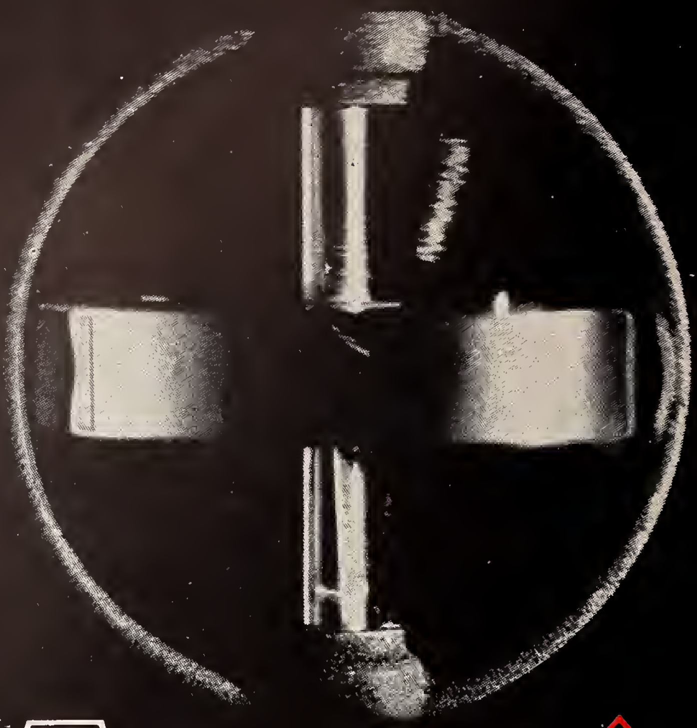
# of the patient's chemical and psychic balance . . .



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  and
  inflammatory symptoms[1-20]

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anti-inflammatory and antiallergic levels ARISTOCORT means:

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- **negligible calcium depletion**
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cations: rheumatoid arthritis; arthritis; respiratory allergies; allergic and inflammatory
natoses; disseminated lupus erythematosus; nephrotic syndrome; lymphomas and leukemias.
autions: With ARISTOCORT all traditional precautions to corticosteroid therapy should be ob-
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References: 1. Feinberg, S.M., Feinberg, A.R., and Fisherman, E.W.: *J.A.M.A.* 167:58 (May 3) 1958. 2. Epstein, J.I. and Sherwood, H.: *Connecticut Med.* 22:822 (Dec.) 1958. 3. Friedlaender, S. and Friedlaender, A.S.: *Antibiotic Med. & Clin. Ther.* 5:315 (May) 1958. 4. Segal, M.S. and Duvenci, J.: *Bull. Tufts North East M. Center* 4:71 (April-June) 1958. 5. Segal, M.S.: Report to the A.M.A. Council on Drugs, *J.A.M.A.* 169:1063 (March 7) 1958. 6. Sherwood, H. and Cooke, R.A.: *J. Allergy* 28:97 (Mar.) 1958. 7. Duke, C.J. and Oviedo, R.: *Antibiotic Med. & Clin. Ther.* 5:710 (Dec.) 1958. 8. McGavack, T.H.: *Clin. Med.* (June) 1958. 9. Freyberg, R.H.; Berntsen, C.A., and Hellman, L.: *Arthritis and Rheumatism* 1:215 (June) 1958. 10. Hartung, E.F.: *J.A.M.A.* 167:973 (June 21) 1958. 11. Hartung, E.F.: *J. Florida Acad. Gen. Pract.* 8:18, 1958. 12. Zuckner, J.; Ramsey, R.H.; Caciolo, C., and Gantner, G.E.: *Ann. Rheum. Dis.* 17:398 (Dec.) 1958. 13. Appel, B.; Tye, M.J., and Leibsohn, E.: *Antibiotic Med. & Clin. Ther.* 5:716 (Dec.) 1958. 14. Kalz, F.: *Canad. M.A.J.* 79:400 (Sept.) 1958. 15. Mullins, J.F., and Wilson, C.J.: *Texas State J. Med.* 54:648 (Sept.) 1958. 16. Shelley, W.B.; Harun, J.S., and Pillsbury, D.M.: *J.A.M.A.* 167:959 (June 21) 1958. 17. DuBois, E.F.: *J.A.M.A.* 167:1590 (July 26) 1958. 18. McGavack, T.H.; Kao, K.T.; Leake, D.A.; Bauer, H.G., and Berger, H.E.: *Am. J. Med. Sc.* 236:720 (Dec.) 1958. 19. Council on Drugs: *J.A.M.A.* 169:257 (Jan. 17) 1959. 20. Rein, C.R.; Fleischmajer, R., and Rosenthal, A.R.: *J.A.M.A.* 165:1821 (Dec. 7) 1957.

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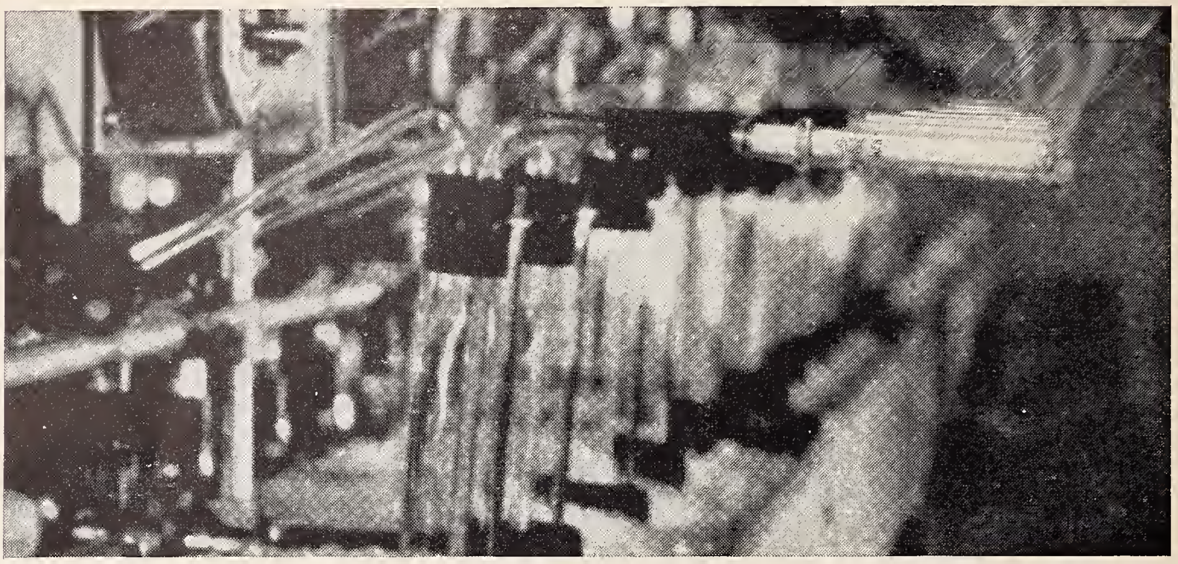

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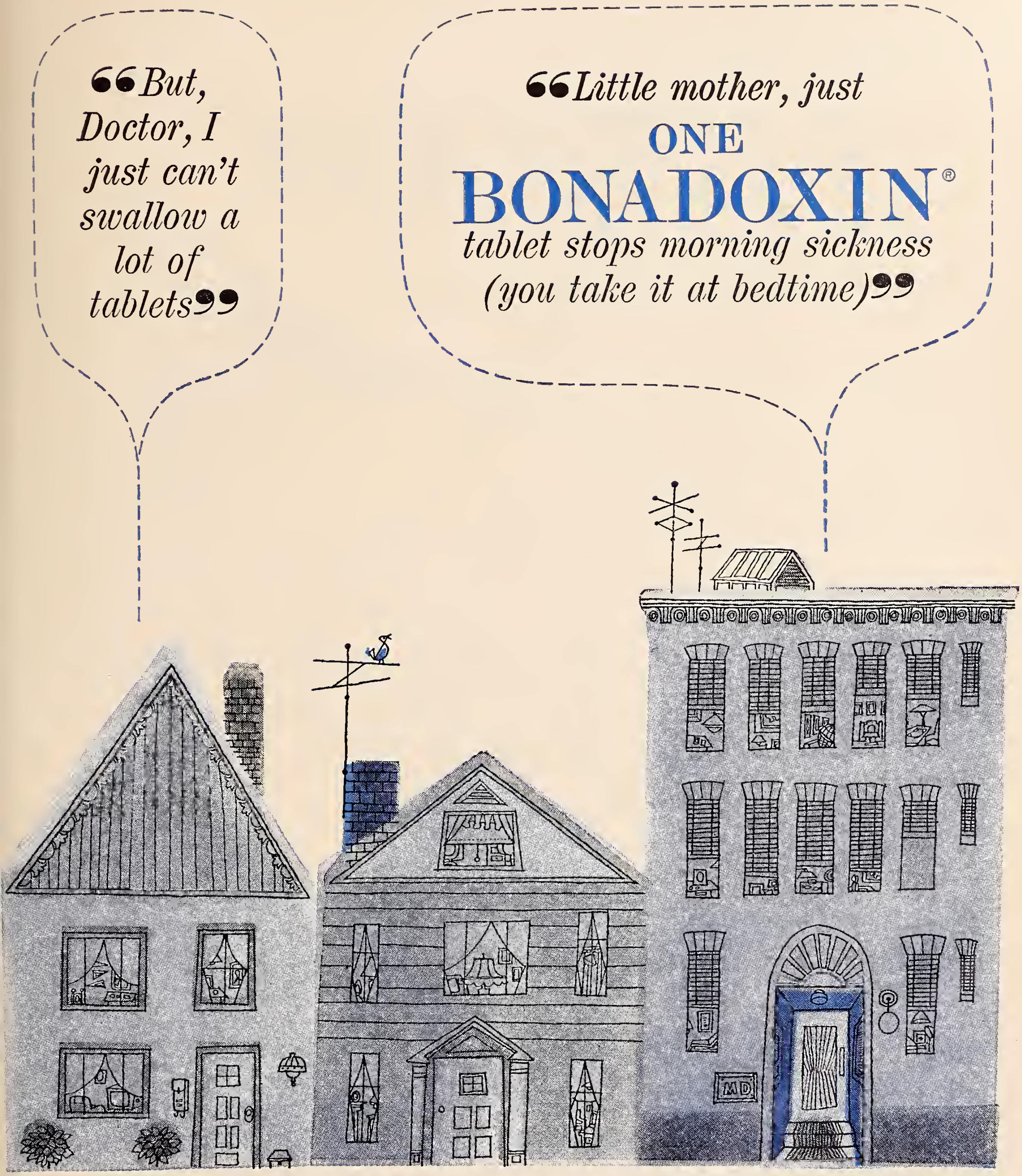
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The formula tells why BONADOXIN quickly stops nausea and vomiting of pregnancy in 9 out of 10 cases.* Each tiny BONADOXIN tablet contains:
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More than 60,000,000 tablets prescribed and taken. Toxicity low, tolerance excellent. In bottles of 25 and 100. Usual dose: one tablet at bedtime; severe cases may require another on arising. See PDR, p. 779.

BONADOXIN also effectively relieves nausea and vomiting associated with: anesthesia, radiation sickness, Meniere's syndrome, labyrinthitis, cerebral arteriosclerosis and motion sickness.

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Adults and older children	1	2	three times daily
Children 4 months to 6 years of age	½	1	
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(from Seventh Annual Antibiotic Symposium, Nov. 4-6, 1959, Washington, D. C.)

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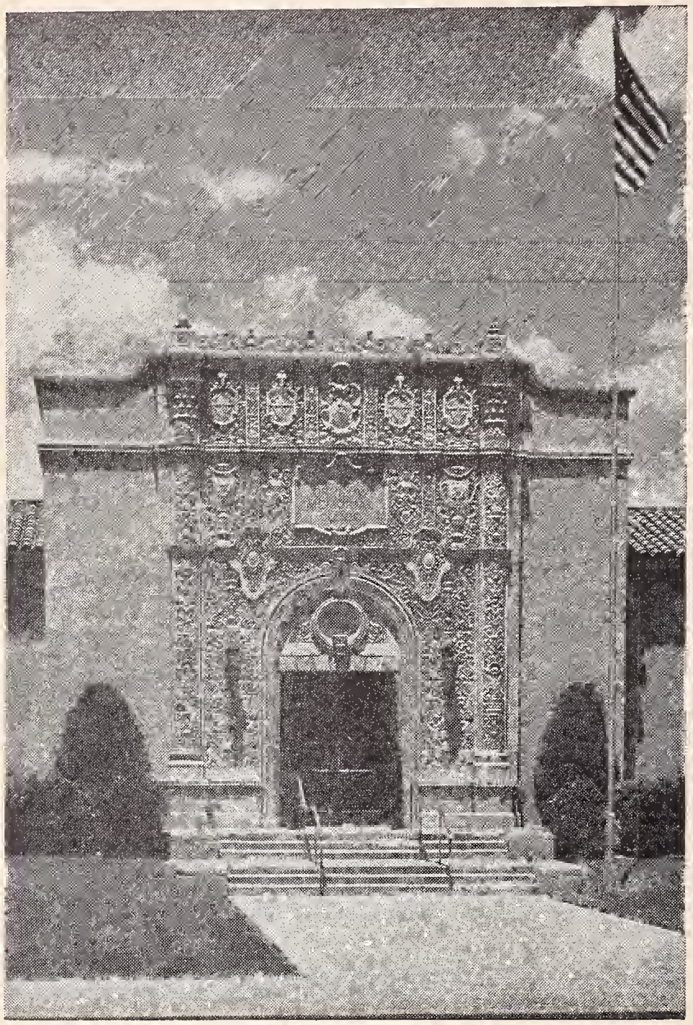

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**Source:* Traisman, H. S.; Boehm, J. J., and Newcomb, A. L.: Diabetes *8*:289, 1959.

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Polyphagia	28	25.4
Anorexia	16	14.5
Lethargy	14	12.7
Enuresis	7	6.4
Vomiting	5	4.5
Irritability	3	2.7
"Craving for sweets"	3	2.7
"Sticky diaper"	3	2.7
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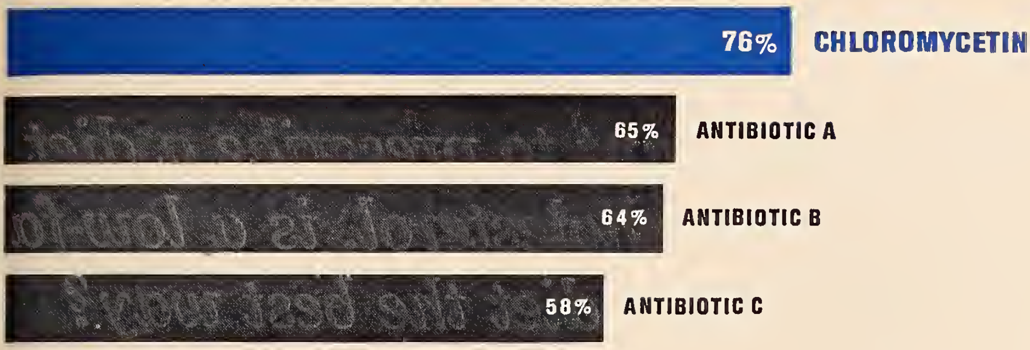

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*Adapted from Leming & Flanigan.[1]

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Arizona Medicine

JOURNAL OF ARIZONA MEDICAL ASSOCIATION

MEDICAL SOCIETY OF THE UNITED STATES AND MEXICO

February, 1960

Vol. 17, No. 2

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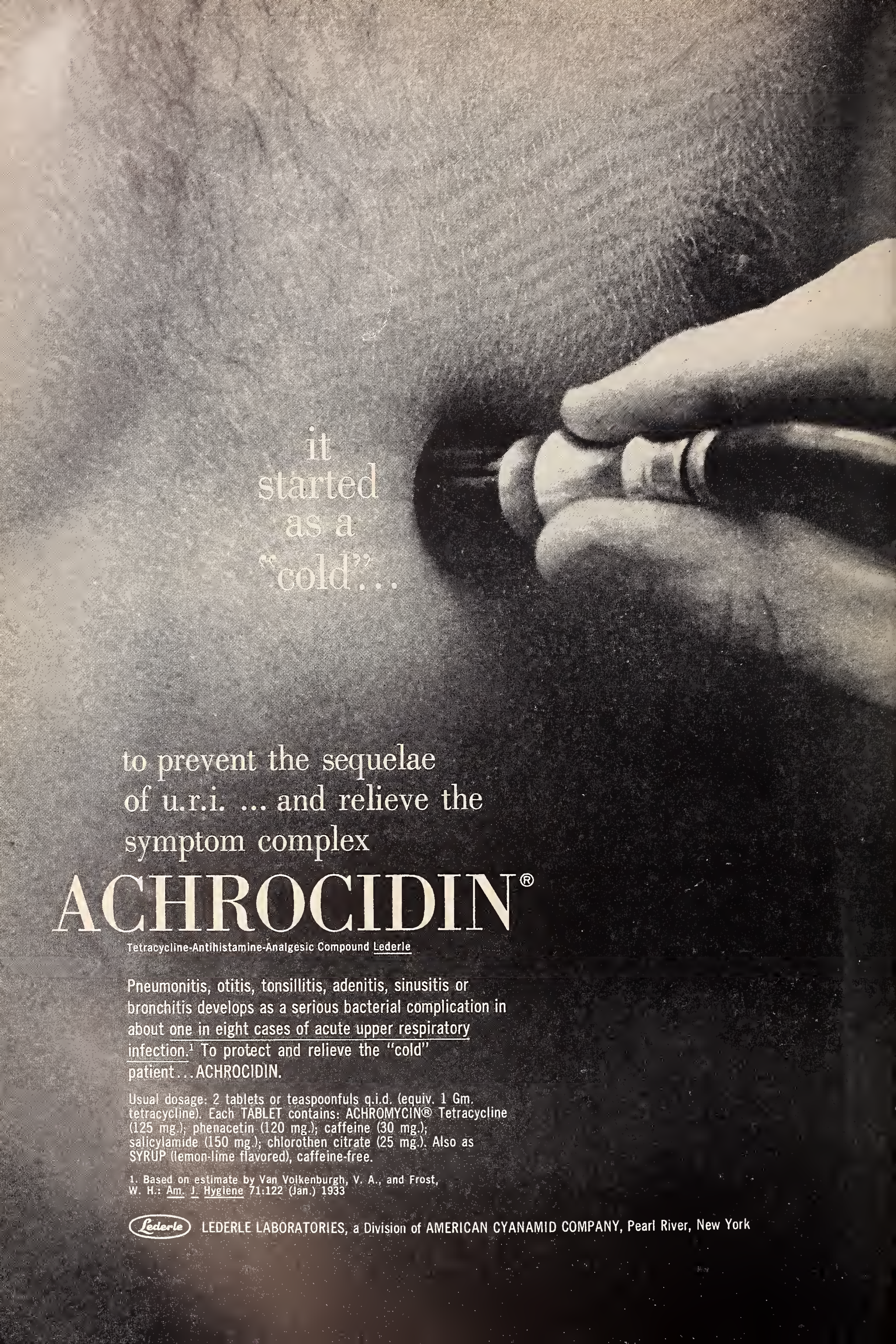
Published monthly by the Arizona Medical Association, Inc. Business office at 1021 Central Towers Building, Phoenix, Arizona. Subscription $5 a year, single copy 50 cents. Entered as second class matter March 1, 1921, at Postoffice at Phoenix, Arizona, Act of March 3, 1879.

(The Editors of the Journal assume no responsibility for opinions expressed in the articles contributed by individual members.)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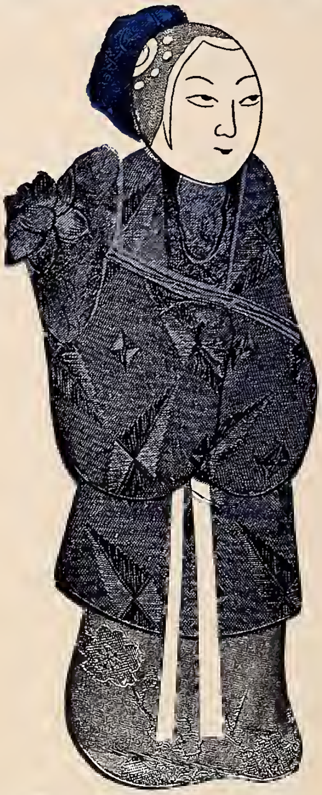

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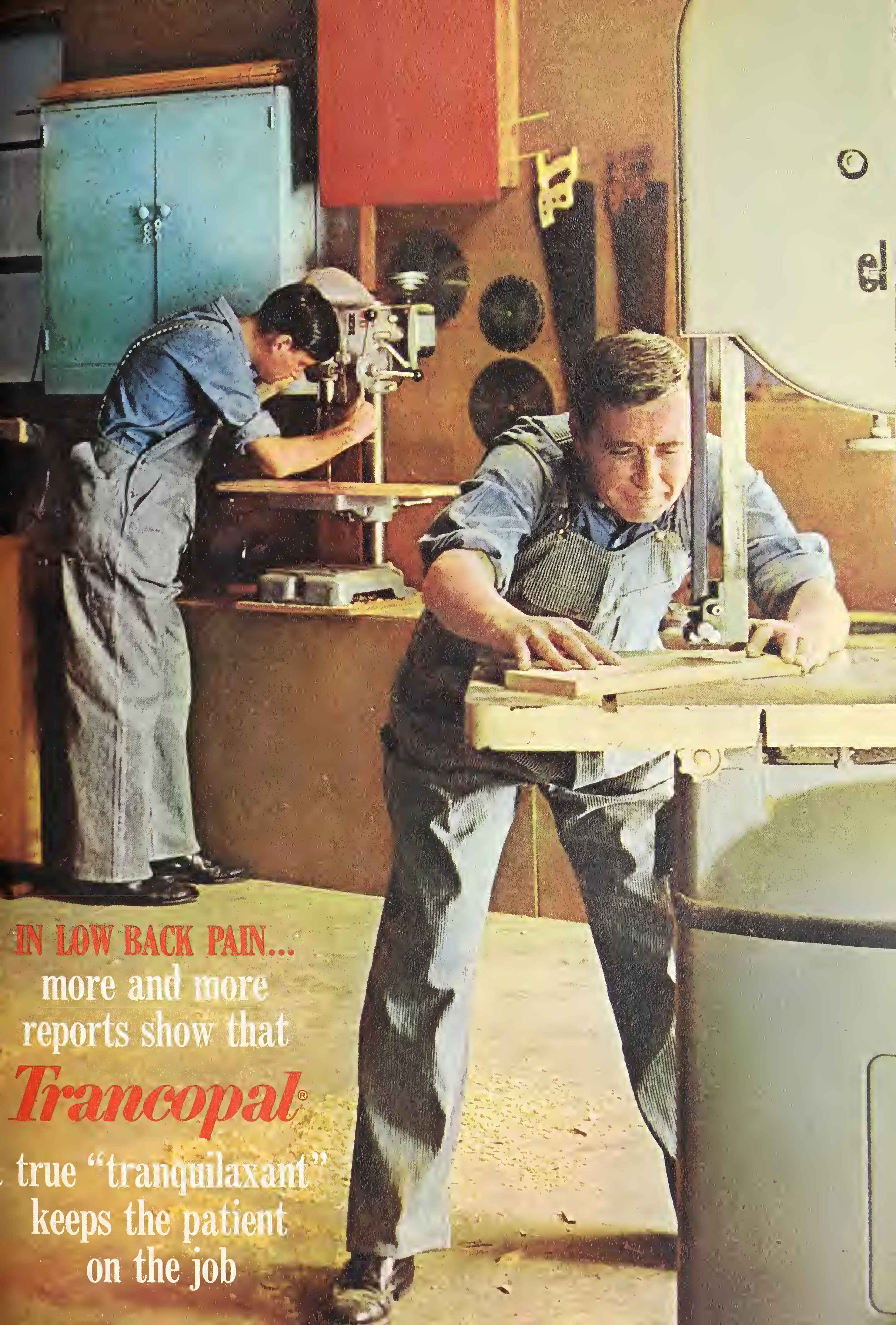
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Mullin and Epifano call Trancopal "... a very effective skeletal muscle spasmolytic."[3] They found that Trancopal brought good to excellent relief to all of 39 patients with keletal muscle spasm related to trauma, bursitis, rheumatoid arthritis, osteoarthritis, and ntervertebral disc syndrome. (No side effects were noted except that one patient had slight dryness of the mouth.)

The pattern is similar in every new series reported: Ganz,[4] DeNyse,[5] Shanaphy[6] and Stough.[7]

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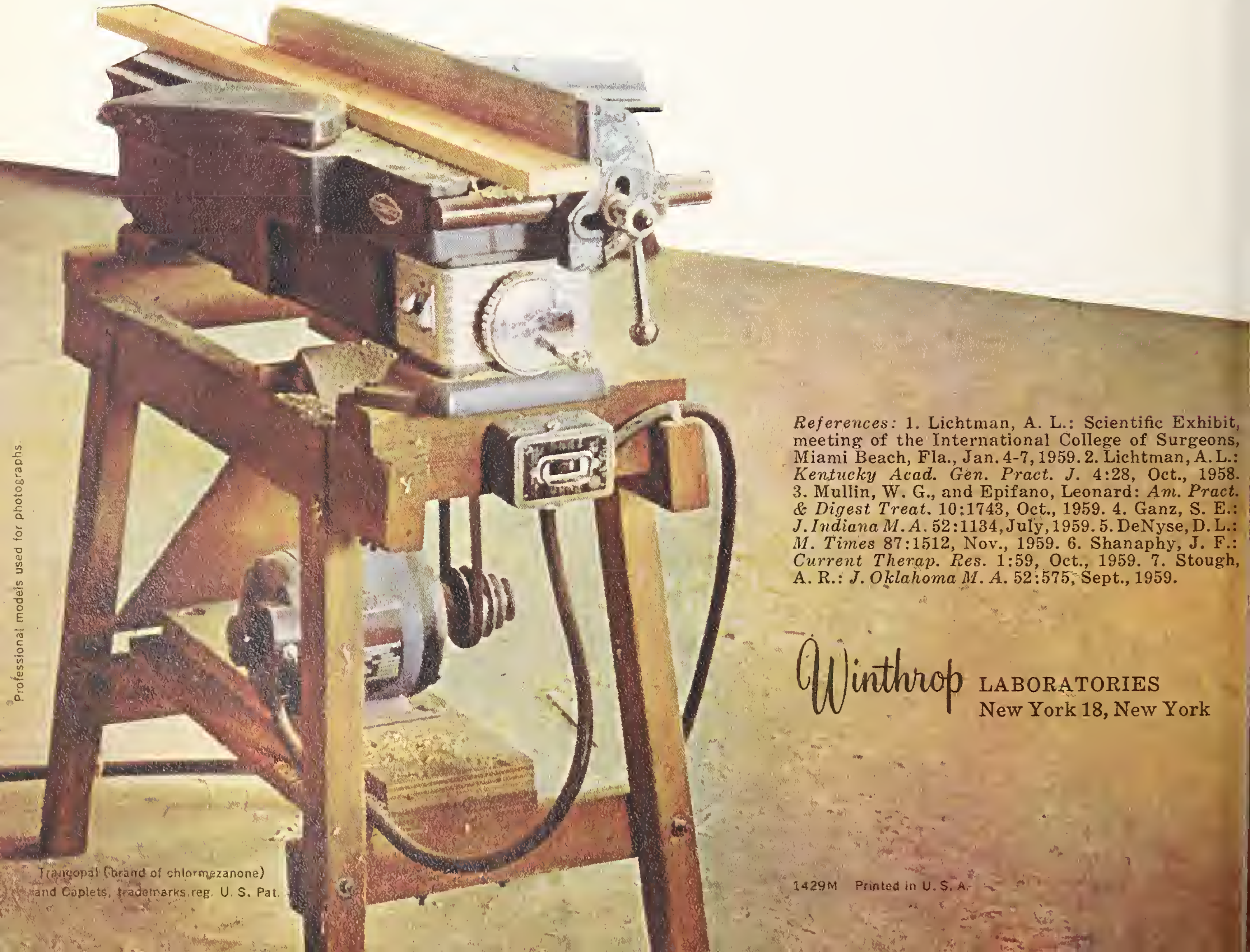

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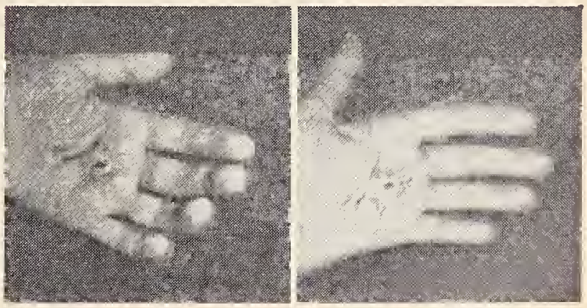

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1. Kuzell, W. C., and others.: Arch. Int. Med. 92:646, 1953. 2. Wolfson, W. Q.: J. Michigan M. Soc. 54:323, 1955. 3. Strandberg, B.: Brit. J. Phys. Med. 19:9, 1956. 4. Platt, W. D., Jr., and Steinberg, I. H.: New England J. Med. 256:823 (May 2) 1957.

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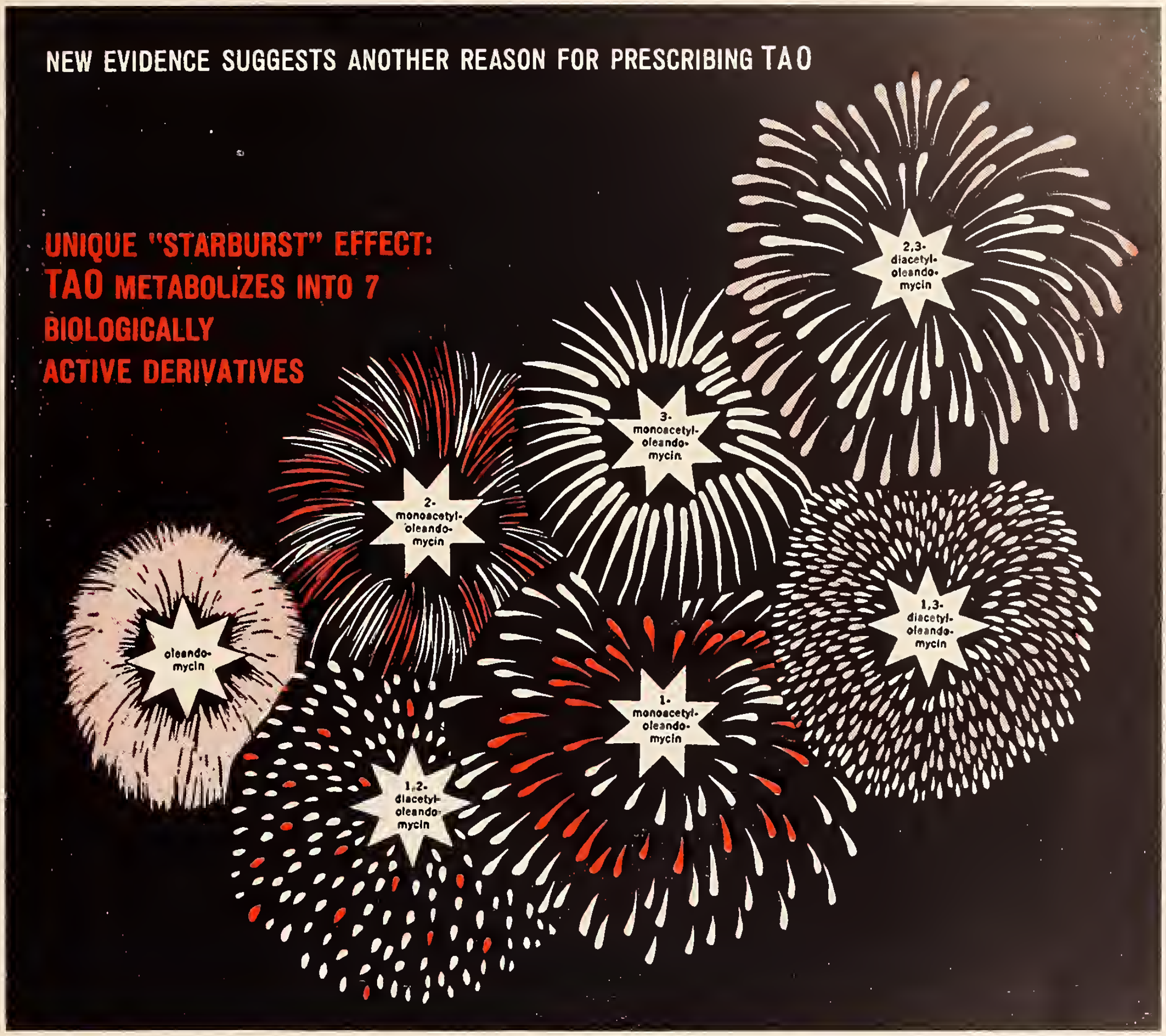
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1. English, A. R., and McBride, T. J.: Proc. Soc. Exper. Biol. & Med. 100:880 (Apr.) 1959. 2. Celmer, W. D.: Antibiotics Annual 1958-1959, New York, Medical Encyclopedia, Inc., 1959, p. 277. 3. English, A. R., and Fink, F. C.: Antibiotics & Chemother. 8:420 (Aug.) 1958.

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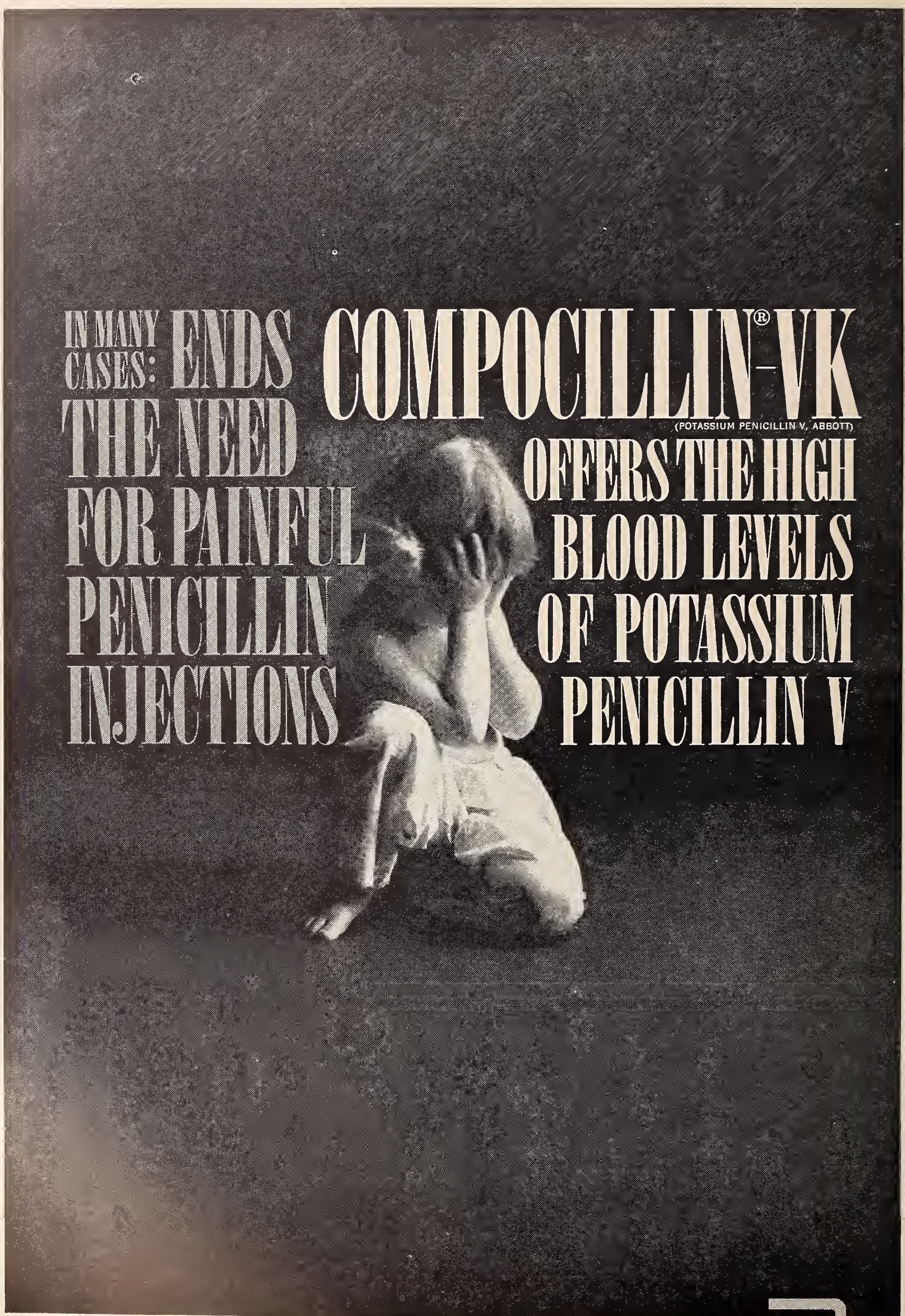
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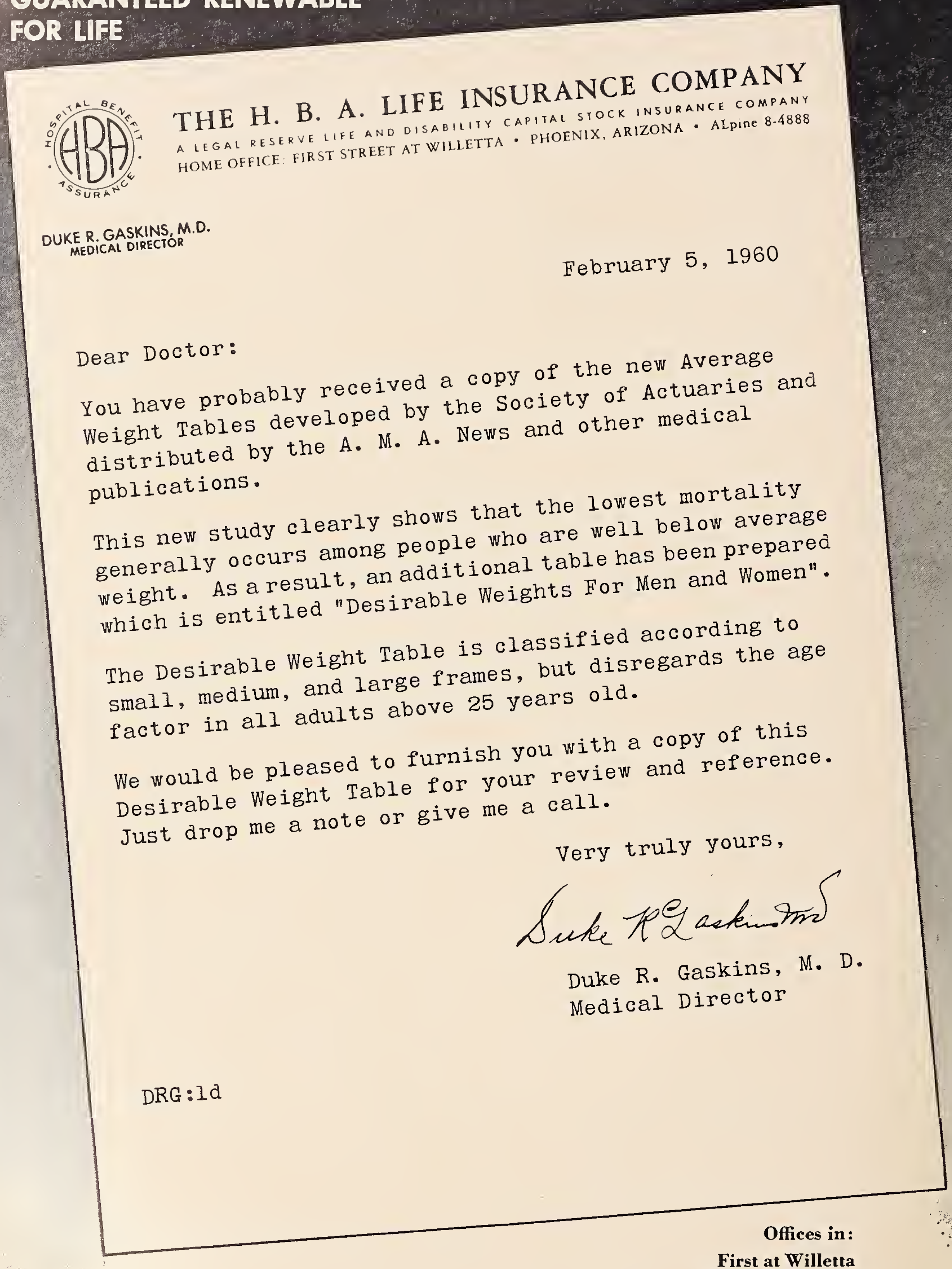

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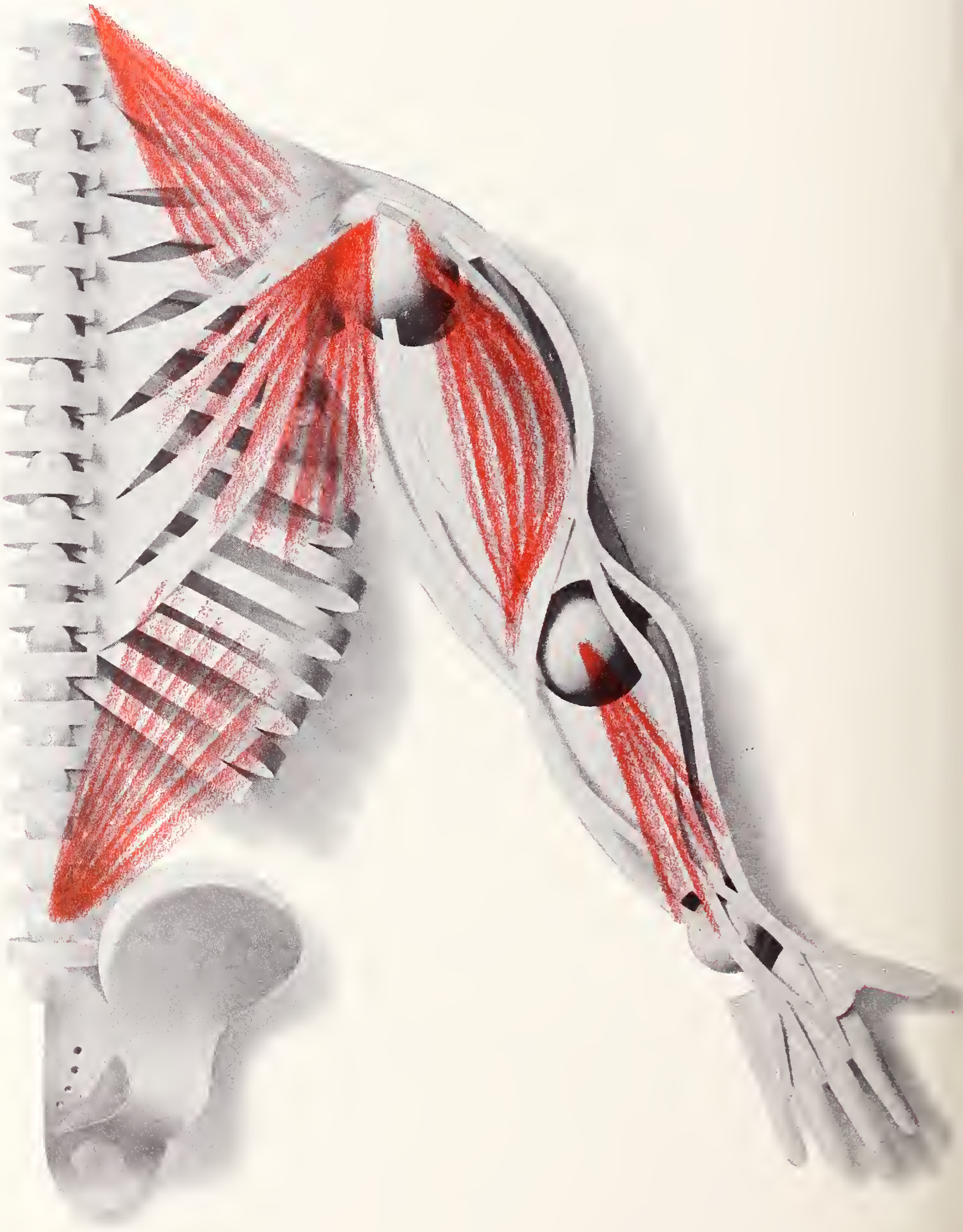

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Wein, A. B.: The Use of Carisoprodol in Orthopedic Surgery and Rehabilitation. Proceedings of the Symposium on The Pharmacology and Clinical Usefulness of Carisoprodol. Wayne State University Press, Detroit, 1959, p. 156.

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Cooper, C. D., and Epstein, J. H.: The Clinical Evaluation of Carisoprodol by a double-blind technique. Ibid. p. 97.

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# in the Therapy of PNEUMONIA

Preferably, antibiotic therapy should be based on pretreatment culture of the offending pathogen, but in bacterial pneumonia the problem may well be too pressing to permit the required delay of 24 to 48 hours. A differential diagnosis among bacterial pneumonias, based on such clinical grounds as speed of onset, sepsis and pain may guide the choice of antibiotic for initiation of therapy.

Should clinical judgment dictate that antibiotic therapy be started immediately, at the same time a sputum sample or a subglottic swab can be sent to the laboratory for culture and sensitivity studies. If the response to the first antimicrobial agent proves unsatisfactory, a reasonable basis for changing therapy will then be at hand.

Choosing the Antibiotic

Since therapy must be started at once for bacterial pneumonia, it is advisable to choose a broad-spectrum antibiotic that quickly produces high levels of active agent (e.g., tetracycline phosphate complex, TETREX). Such an antibiotic probably has the best chance of controlling the pathogen, whether it be gram-negative or gram-positive. And if the laboratory report shows that the invading organism is much less sensitive to tetracycline than to other agents, the patient can then be changed to an appropriate antibiotic. If the difference in sensitivity is slight, then the possibility of side effects, sensitization, and toxicity should be evaluated before changing therapy to another antibiotic.

The greatest number of bacterial pneumonias are caused by pneumococci, which respond very well to penicillin, tetracycline, and chloramphenicol. Also, these antibiotics are usually effective against the other gram-positive coccal pneumonias. But penicillin is ineffective against the viral pneumonias and the gram-negative *Hemophilus influenzae* and *Klebsiella pneumoniae.* Although *K. pneumoniae* causes only about 1 to 2 per cent of pneumonia cases on the average,[1] these are apt to be acute and fulminating (Friedländer's pneumonia), with a high mortality rate if not effectively treated. Since pneumococcal pneumonia may be difficult to distinguish clinically from Friedländer's, except by gram-stained sputum smear, it may be wiser to start treatment with an agent also effective against Klebsiella.

Penicillin, however, in addition to having a limited spectrum, also causes many minor and some serious sensitivity reactions. In a recent survey[2] it was found that penicillin produced severe skin reaction. But most important was the observation that anaphylactic shock, with a fatality rate of about 9 per cent, was the most frequent serious reaction. Such severe reactions are almost always associated with parenteral administration.

Tetracycline is also clinically effective in primary atypical pneumonia.[3]

The tetracyclines (e.g., TETREX) have the advantage of a broad range of antimicrobial activity and low toxicity. And in addition, the physician does not have to trouble himself or his patients with repeated blood studies when he prescribes TETREX. Minor reactions such as gastric upsets or mild skin rashes occur occasionally. The most serious side effects are staphylococcal and monilial overgrowth, but these are rare and can be adequately controlled.

No one would deny that appropriate antibiotic therapy has greatly reduced morbidity and saved many lives of patients with bacterial pneumonia. Nevertheless, general supportive measures in the care of patients remain important even today. Especially in the desperately ill patient, antibiotics are not considered as substitutes for the individual evaluation, clinical observation and judgment of the physician.

Some Micro-organisms Susceptible[a] *to Tetracycline* (TETREX)[b]

Streptococcus; Staphylococcus; Pneumococcus; Gonococcus; Meningococcus; *C. diphtheriae; B. anthracis; E. coli;* Proteus; *A. aerogenes; Ps. aeruginosa; K. pneumoniae;* Shigella; Brucella; *P. tularensis; H. influenzae; T. pallidum;* Rickettsiae; Viruses of psittacosis and ornithosis, lymphogranuloma inguinale, primary atypical pneumonia; *E. histolytica; D. granulomatosis.*

[a] Some strains are not susceptible.

[b] Table adapted from Goodman, L. S., and Gilman, A.: The Pharmaceutical Basis of Therapeutics. 2nd edition, New York, The Macmillan Co., 1956, pp. 1322-1323.

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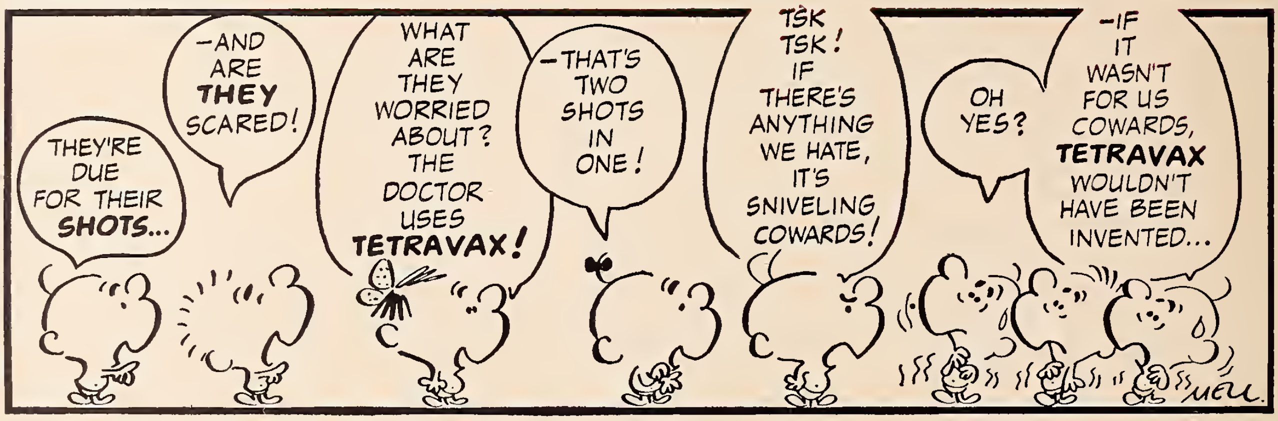
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[1] Ford, R. A., and Blanchard, K.: Journal-Lancet 78:185, 1958.

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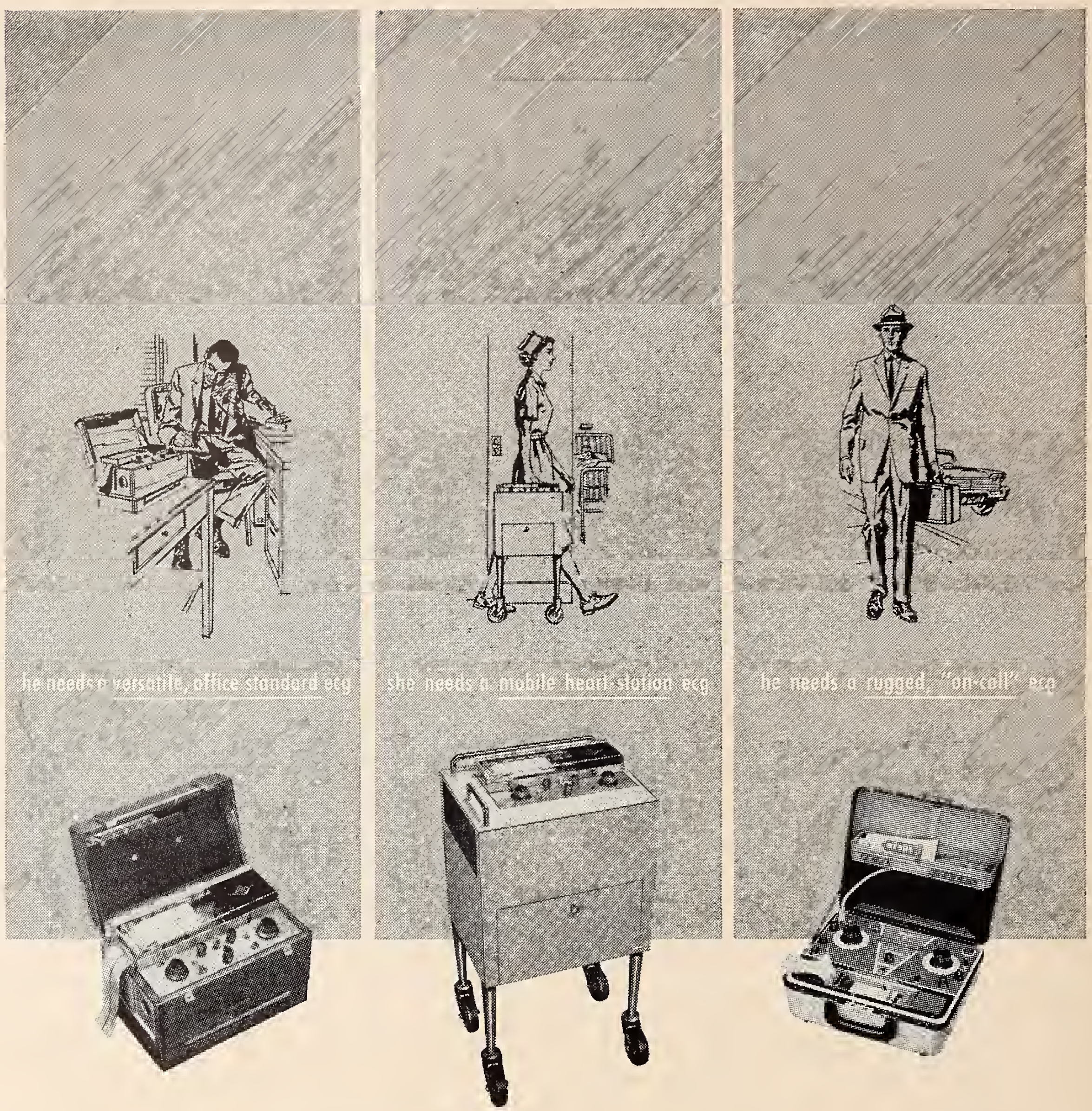
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1. Cook, J.E., Briggs, G.W., and Hindley, F.W.: Chronic Amebiasis and the Need for a Diagnostic Profile, Am. Pract. and Dig. of Treat. *6*:1821 (Dec., 1955).

2. Rinehart, R.E., and Marcus, H.: Incidence of Amebiasis in Healthy Individuals, Clinic Patients and Those with Rheumatoid Arthritis, Northwest Med., *54*:708 (July, 1955).

3. Webster, B.H.: Amebiasis, a Disease of Multiple Manifestations, Am. Pract. and Dig. of Treat. *9*:897 (June, 1958).

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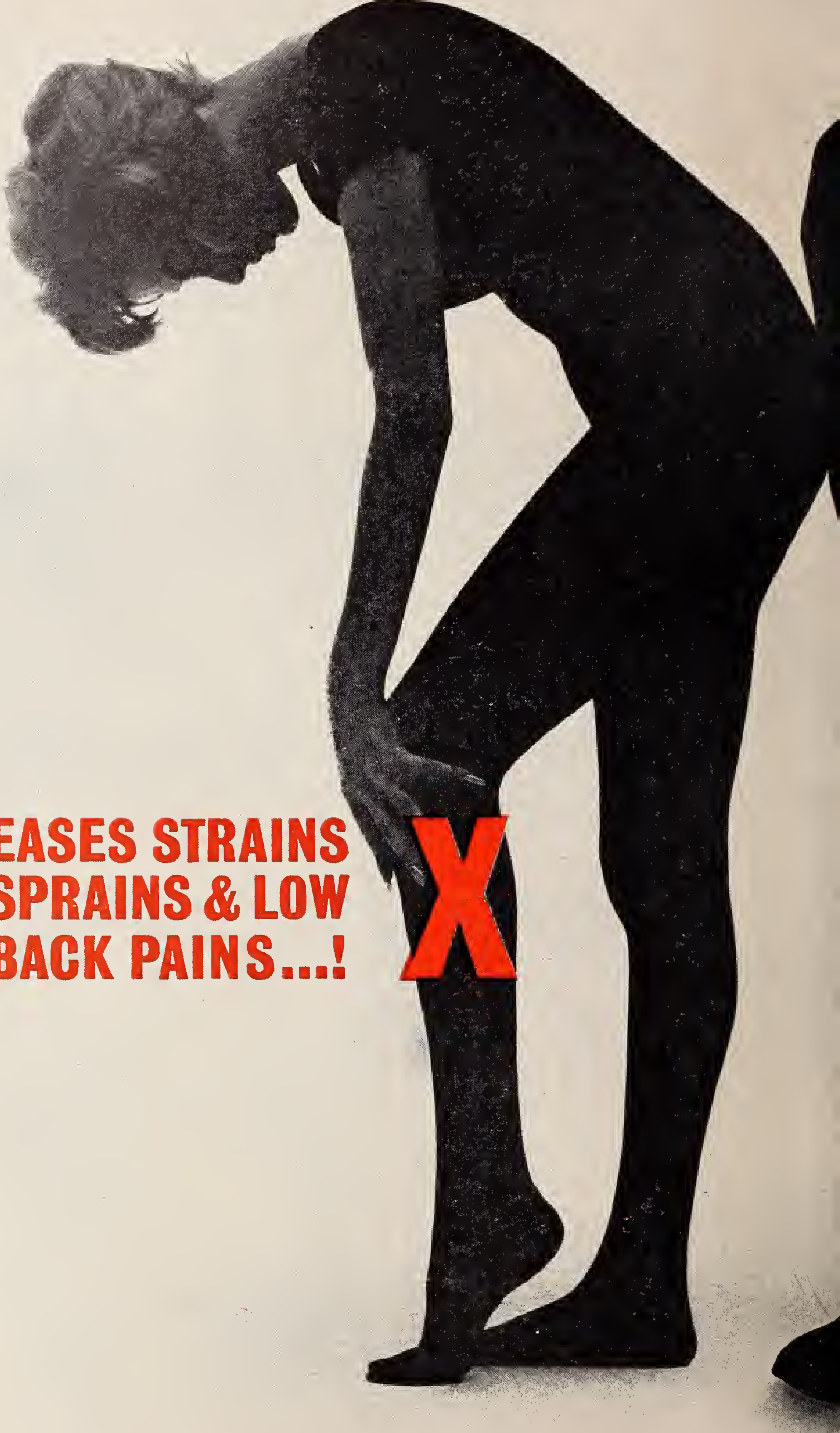

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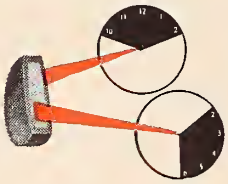

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1. Fabricant, N. D.: E.E.N.T. Monthly *37*:460 (July) 1958.
2. Lhotka, F. M.: Illinois M. J.: *112*:259 (Dec.) 1957.
3. Farmer, D. F.: Clin. Med. *5*:1183 (Sept.) 1958.

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1. Smith, I. M., and Soderstrom, W. H.: J. A. M. A., *170*:184 (May 9), 1959.

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Original Articles

ARIZONA MEDICINE

VOL. 17, NO. 2 FEBRUARY, 1960

Rabies in Insectivorous Bats of Arizona

Willard D. Dean, M.S.*
Keith T. Maddy, D.V.M., M.P.H.**
E. Lendell Cockrum, Ph.D.***
H. Gilbert Crecelius, Ph.D.****

RABIES HAS BEEN present in Arizona for many years and the number of laboratory diagnosed cases has remained fairly constant for the past several years. (Fig. 1, 2, 3, 4). In 1953 the first case of rabies in a bat in the United States was diagnosed in Florida in a Florida yellow bat *(Dasypterus floridanus)* that attacked and bit a boy. (1) In 1957 the Arizona State Department of Health Laboratories diagnosed bat rabies for the first time. (2) (3) The bats were from four different areas of the central and southeastern parts of the state, and they were classified as follows: two Hoary bats *(Lasiurus cinereus)*, one Big brown bat *(Eptesicus fuscus)*, one Pallid bat *(Antrozus pallidus)* and one Mexican free-tail *(Tadarida brasiliensis mexicana)*. These bats had been submitted for examination because of a suspicion of rabies.

In order to study the epidemiological significance of rabies in bats in Arizona, a survey was undertaken which consisted of collecting bats from various parts of the endemic area and examination of them for rabies.

MATERIALS AND METHODS

Bat Collections. – In central and southeastern Arizona during the last half of 1957 and the first half of 1958, 552 bats representing nine species were collected. (Fig. 5) (Table 1) The bats were captured with nets, forceps, and gloved hands.

Personal Protection. – All persons collecting bats had received at least three intradermal injections of High Egg Passage chicken-embryo-attenuated (Flury strain) rabies vaccine supplied by Lederle Laboratories.

Demonstration of Virus. – The bats were killed with chloroform. The brains from collections 1 through 26 were pooled in multiples of 5 and each pooled composite was inoculated into 5 mice. A similar procedure was followed for the salivary glands. Note that the last group of 5 mice in each collection sometimes represented a composite of fewer than 5 bats. From each bat one half the brain (divided longitudinally) and the salivary glands from one side were frozen and saved for later study. For collections 27 through 31 one half the brain of each bat was used for one group of 5 mice; likewise one set of salivary glands from each bat was used for one group of mice.

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This paper presented by Maddy at the Conference on Diseases in Nature Communicable to Man, Austin, Texas, March 12, 1959. Presented – Arizona Cancer Seminar – 1959

The inoculation technic used was the one recommended by the Communicable Disease Center. (4) A 10 per cent tissue suspension was treated with penicillin and streptomycin and injected intracerebrally into a group of 5 white mice (Webster strain).

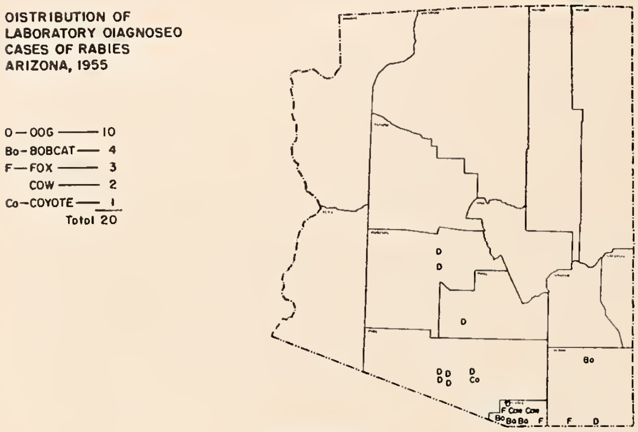
All mice were observed for 30 days for signs of rabies. When mice died, smears of the brain tissue were stained by Sellers' method for miscroscopic examination for Negri bodies. If mice were normal and healthy in appearance after 30 days, they were sacrificed and not examined.

When rabies virus was isolated from a pool, the individual frozen brain or salivary glands of the bats comprising the pool were used for inoculations of groups of 5 mice each.

RESULTS

Isolation of Rabies Virus. – Rabies virus was isolated from 7 pools of salivary glands and from 7 pools of brains. These were from collections 1, 3, 5, 8 and 16. (Table 1.)

From collection 1, individual inoculations resulted in virus isolation from the set of salivary glands of one bat. From collection 3 by individual inocluation, rabies virus was isolated from the brain of one bat. From collection 8, individual inoculation resulted in rabies virus isolation from the set of salivary glands of one bat and the brains of two other bats. From collection 16



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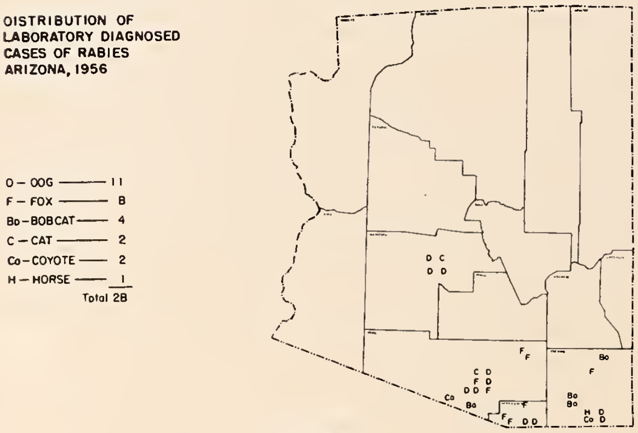

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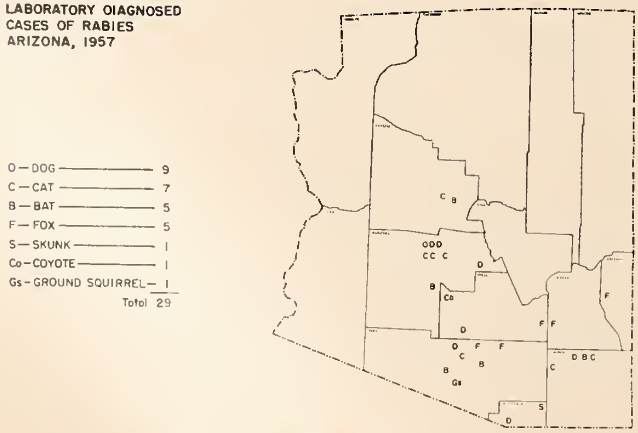

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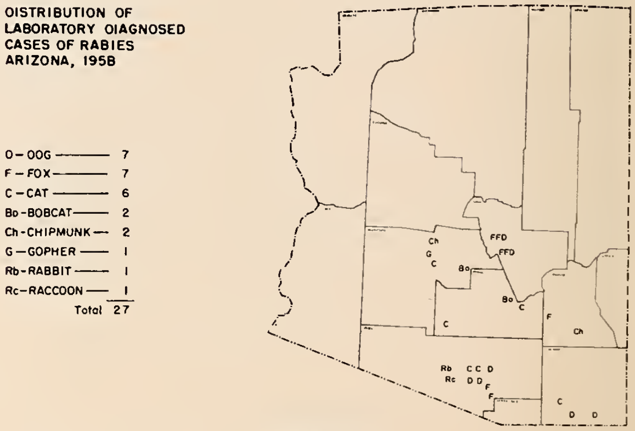

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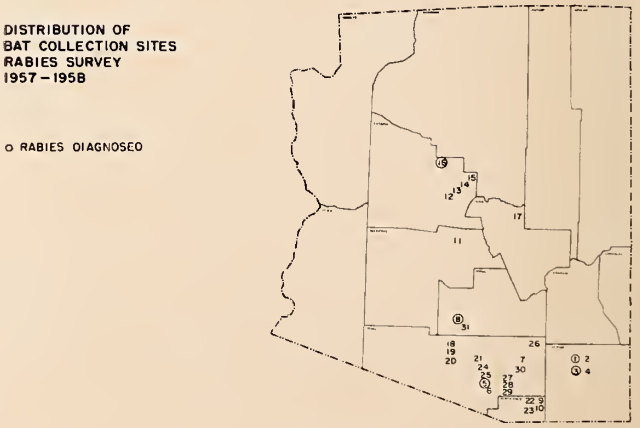


FIGURE 5

Table 1. Summary of Data Relating to Collection of Bats in Arizona in 1957-1958 for Rabies Examinations.

Collection No.	Collection Dates	Place	Type of Habitat	Apparent Health Status	Species	No. Examined			Minimum Number of Bats Found To Have Rabies
						Male	Female	Totel	
1	1957 July 2	Willcox	Under eaves of building	Healthy	Eptesicus fuscus	0	6	6	1
2	July 2	Willcox	In wall of building	Healthy	Tadarida brasiliensis	2	3	5	0
3	July 2	Willcox	Attic of old house	Several re cent deaths	Eptesicus fuscus	0	22	22	1
4	Aug. 2	Willcox	Attic of old house	Healthy	Eptesicus fuscus	0	14	14	0
5	Aug. 5	Twin Buttes	Mine tunnel	Healthy	Antrozus pallidus	15	17	32	3
6	Aug. 5	Twin Buttes	Mine tunnel	Healthy	Myotis velifer	0	3	3	0
7	Aug. 7	Tucson	Under roof of building	Several recent deaths	Tadarida brasiliensis mexicana	3	10	13	0
8	Aug. 7	Picacho	Mine tunnel	Healthy	Myotis velifer	35	77	112	5
9	Aug. 25	Canelo	Under roof of building	Many recent deaths	Eptesicus fuscus	1	6	7	0
10	Aug. 25	Canelo	Under roof of building	Many recent deaths	Myotis evotis	13	12	25	0
11	Aug. 26	Sunnyslope	Mine tunnel	Healthy	Myotis velifer	1	8	9	0
12	Aug. 27	Montezuma's Castle	Roof of room	Healthy	Corynorhinus townsendii	12	16	28	0
13	Aug. 27	Montezuma's Well	On roof of cave	Healthy	Corynorhinus townsendii	1	0	1	0
14	Aug. 27	Montezuma's Well	On roof of cave	Healthy	Myotis velifer	1	0	1	0
15	Aug. 27	Beaver Creek Ranger Sta.	Attic of house	Healthy	Myotis californicus	1	0	1	0
16	Aug. 27	Jerome	old building	Healthy	Tadarida brasiliensis	13	35	48	3
17	Sept. 9	Young	Mine tunnel	Healthy	Myotis thysanodes	3	10	13	0
18	1958 Feb. 7	Sawtooth Mountains	Mine tunnel	Healthy	Macrotus californicus	19	3	22	0
19	Feb. 7	Sawtooth Mountains	Mine tunnel	Healthy	Macrotus californicus	2	0	2	0
20	Mar. 23	Silverbell Mountains	Mine tunnel	Healthy	Macrotus californicus	10	7	17	0
21	Mar. 31	Tucson Mountains	Mine tunnel	Healthy	Macrotus californicus	6	18	24	0
22	Mar. 31	Santa Rita Mountains	Mine tunnel	Healthy	Myotis evotis	1	0	1	0
23	Mar. 31	Santa Rita Mountains	Mine tunnel	Healthy	Myotis velifer	1	0	1	0
24	Apr. 2	Tucson Mountains	Mine tunnel	Healthy	Macrotus californicus	8	11	19	0
25	May 18	Helmet Peak	Mine tunnel	Healthy	Myotis velifer	8	30	38	0
26	May 18	Tucson	Flying over water hole	Healthy	Eptesicus fuscus	0	1	1	0
27	July 29	Continental	Under bridge	Healthy	Antrozus pallidus	1	0	1	0
28	July 29	Continental	Under bridge	Healthy	Antrozus pallidus	0	4	4	0
29	July 29	Continental	Under bridge	Healthy	Myotis velifer	0	2	2	0
30	July 29	Tucson	Under porch roof	Healthy	Eptesicus fuscus	2	0	2	0
31	Aug. 8	Picacho	Mine tunnel	Several recent deaths	Myotis velifer	2	12	14	0
TOTALS						163	389	552	13

Table 2. List of species of Bats native to Arizona with information as to distribution of each species and the reported diagnosis of rabies both in Arizona and elsewhere in the United States.

Species of Bats	Distribution in Arizona	Numbers and Habitat	Distribution in the United States	Examined In 1957-1958 Arizona Survey	Positive For Rabies In 1957-1958 Arizona Survey	Found to have Rabies by Arizona State Dept. of Health—1957 Routine examination	Rabies has been reported as having been diagnosed in other states of the U.S.
Family Phyllostomatidae							
1. Long-nosed bat (*Leptonycteris nivalis*)	Pima, Santa Cruz and Cochise counties	Large colonies in caves (few mine tunnels)	Southern Arizona, New Mexico and Texas				
2. Hog-nosed bat (*Choeronycteris mexicana*)	Pima, Santa Cruz and Cochise counties	Few individuals, usually near front of mine tunnels	Southern California and Arizona				
3. Leaf-chinned bat (*Mormoops megalophylla*)	Known from two specimens from Santa Cruz County	Rare; caves	Southern Arizona and Texas				
4. Leaf-nosed bat (*Marcrotus californicus*)	Lower elevations; western and southern part of the state	Common; shallow caves, mine tunnels; bridges	Southern California and Arizona	X			X
Family Vespertilionidae							
5. Cave myotis (*Myotis velifer*)	Lower elevations; western and southern part of the state	Large colonies in caves, mine tunnels; buildings	Southeastern California east to Oklahoma and south to Mexico	X	X		X
6. Long-eared myotis (*Myotis evotis*)	State wide at elevations above 5000 feet	Uncommon; mine tunnels; hollow trees	Western U. S.	X			
7. Fringe-tailed myotis (*Myotis thysanodes*)	Statewide at elevations above 5000 feet	Caves, mine tunnels and buildings	Western U. S.	X			
8. California myotis (*Myotis Californicus*)	Statewide	Locally common	Western U. S.	X			X
9. Arizona myotis (*Myotis occultus*)	Known from few localities below Mogollon Rim	Rare; caves, mine tunnels and buildings	Scattered localities in S. Calif., Ariz. and New Mexico				
10. Yuma myotis (*Myotis yumanensis*)	Statewide	Locally common	Western U. S.				
11. Long-legged mytois (*Myotis volans*)	Statewide at elevations above 5000 feet	Uncommon	Western U. S.				
12. Small-footed myotis (*Myotis subulatus*)	Statewide	Uncommon	Mainly Western U. S.				
13. Silver-hired bat (*Lasionycteris noctivagans*)	Statewide at elevations above 5000 feet	Uncommon, solitary tree dwelling bat	Throughout U. S.				
14. Western pipistrel (*Pipistrellus hesperus*)	Statewide	Common, roosts singly in rock crevices, and in cracks in bldgs.	Western U. S.				

15. Big brown bat (*Eptesicus fuscus*)	Statewide	Locally common; colonies in attics of bldgs.; barns; hollow trees	Throughout U. S.	X	X	X	X
16. Red bat (*Lasiarus borealis*)	Statewide in regions of trees	Uncommon, solitary tree dwelling bat	Throughout U. S.				X
17. Hoary bat (*Lasiurus cinereus*)	Statewide in regions of trees	Uncommon, solitary tree dwelling bat	Throughout U. S.			X	X
18. Lump-nosed bat (*Corynorhinus townsendii*)	Statewide at elevations above 5000 feet	Locally common, colonies in caves, damp mine tunnels; few in buildings	Western U. S.			X	X
19. Mexican big-eared bat (*Idionycteris phyllotis*)	Graham and Cochise counties	Extremely rare, one colony known from cave	Known only from Arizona				
20. Spotted bat (*Euderma maniculata*)	Known from four specimens, Maricopa and Yuma counties	Extremely rare. Habits unknown	Extremely rare in Western U. S.				
21. Pallid bat (*Antrozous pallidus*)	Statewide	Locally common; rock crevices, buildings, bridges	western U. S.	X	X	X	X
Family Molossidae 22. Mexican free-tailed bat (*Tadarida brasiliensis*)	Statewide, mainly at elevations below 5000 feet	Locally extremely common, colonies in caves, mine tunnels, buildings and rock crevices	From Oklahoma west and south	X	X	X	X
23. Pocketed free-tailed bat (*Tadarida femorosacca*)	Lower elevations of western and southern part of state	Rare, small colonies in buildings and rock crevices	Southern Calif., Arizona and New Mexico				
24. Big free-tailed bat (*Tadarida molossa*)	Statewide, mainly at elevations below 5000 feet	Rare, small colonies in rock crevices	Rare throughout				
25. Western mastiff bat (*Eumops perotis*)	Lower elevations western and southern Arizona	Rare, small colonies in rock crevices	Southern Calif., Arizona and Texas				
26. Underwood's mastiff bat (*Eumops underwoodi*)	Known only from regions of Sasabe, Pima county	Extremely rare, probably in rock crevices	Known only from Arizona				

rabies virus was isolated from the brains of two different bats.

Cumulative data for both the positive pools and the individual isolations shows that rabies virus was present in at least 13 different bats.

Demonstration of Negri bodies in the brains of the mice was considered a definite diagnosis of rabies; however, as a further check two of the isolates were sent to the Virus and Rickettsial Laboratory of the Communicable Disease Center of the Public Health Service. Both were identified as rabies virus by serum neutralization tests.

DISCUSSION

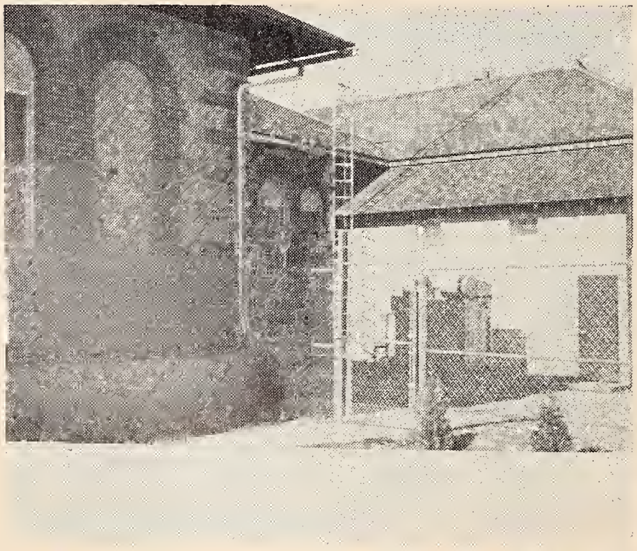
It is conceivable that the additional period of freezing and a second thawing was detrimental to the rabies virus in the brains and salivary glands used for follow-up individual inoculations, resulting in failure to isolate virus from some individual bats in identified positive pools.

We have examined 10 of the 26 species of bats commonly found in Arizona (nine in this survey herein reported and one, *Lasiurus cinerus,* taken from routaine laboratory admissions) and have diagnosed rabies in five of them *(Eptesicus fuscus, Tadarida brasiliensis mexicana, Myotis velifer, Antrozus pallidus* and *Lasiurus cinereus.)* (Table 2)

In other parts of the United States rabies has been diagnosed and reported in 7 of the above mentioned 26 species. We have knowledge of three species commonly found in Arizona that have been diagnosed elsewhere in the country as having rabies, but the results are not yet published. Constantine and Solomon* have isolated rabies virus from *Macrotus californicus,* and have made suspect isolates from *Tadarida molossa* and *Corynorhinus townsendii.* These bats were collected from other states, however, these species are also found in Arizona. Thus over half of the species of bats found in Arizona are strong rabies suspects.

Of the 26 species known to occur in Arizona, 15 are widely distributed and are relatively common in the western part of the United States. There are 11 species of bats remaining which have not been surveyed, except for the *Tadarida molossa* mentioned above. These species are rare in the United States or they are species found primarily in Mexico and are found in the United States in a small region just north of the U.S.-Mexico border.

Collection 1 was from the eaves of a building and collection 3 was from the attic of an old house a few blocks away in the town of Willcox. (Figs. 6 and 7). It is possible that the bats were of the same colony. The colony of Big brown bats in the old house was one from which rabies virus had been isolated from one bat several weeks before. This was a maternity colony which had been observed to congregate in the spring and disband in the fall for the two previous years. Big brown bats spend their winter months in hibernation in caves, mine tunnels and rock crevices in the same general area where they spend their summers. One bat of this colony carried a wingband one of us (Cockrum) had placed on it in a mine tunnel Sept. 27, 1956 at Portal, 50 miles to the southeast. One recently dead Mexican free-tail bat *(Tadarida brasiliensis*



6. A Rabid Big brown bat was Taken From Under Eaves of This Building for Collection No. 1.

7. A Rabid Big brown bat was Taken from the Attic of This Old House for Collection No. 3.

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*Constantine, D. and Solomon, G. are at the Southwest Rabies Investigation Station of the Communicable Disease Center of the Public Health Service of the U. S. Dept. of Health, Education and Welfare.

mexicana) was found with the colony in the attic. This species has been observed living in caves in Mexico in areas where vampire bats *(Desmodus rotundus)* live. The Vampire bat has often been found to transmit rabies.

We have received reports of dogs and cats capturing bats in the Willcox area. We also have had reports from Cochise County that coyotes, bobcats, and skunks were seen in mine tunnels trying to catch bats.

The big brown bat, found to have rabies in collections 1 and 3, is a large brown bat with short mouse-shaped black ears and a naked interfemoral membrane. It has a wingspread of approximately 13 inches. Although this species is widely distributed over the United States, Canada, Mexico and Central America, its seasonal migrations are usually only a few miles.

Collection 5 consisted of Pallid bats *(Antrozus pallidus)* from an abandoned mine tunnel on a mountainside 20 miles south of Tucson. (Figs. 8 and 9) Banding studies have revealed that bats of this colony feed throughout the Tucson valley nightly. One bat of this species that was picked up in the Tucson valley four months before was found to have rabies. During 1957 we received reports of foxes and coyotes being seen in the same mine tunnel with bats in this area. Also we had reports of dogs and cats in Tucson area that were seen killing and eating bats.

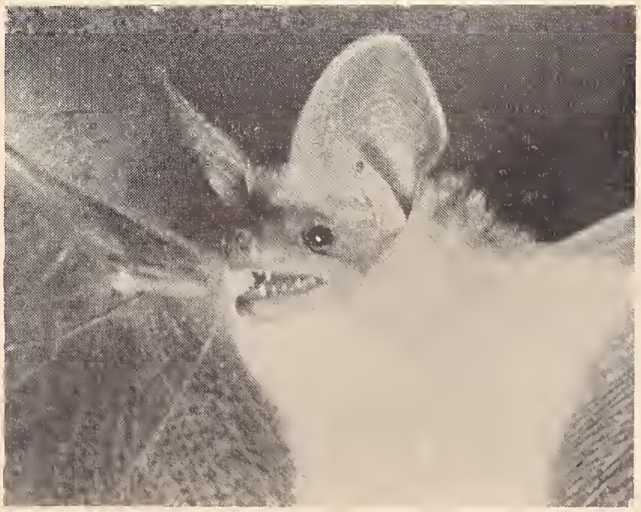
The Pallid bat is a large brown bat with long ears and a naked interfemoral membrane. The wingspread is approximately 12 inches and the ears are more than one inch in length. Dorsally the Pallid bat is yellowish-drab in color and ventrally it is almost white. Pallid bats occur in western North America from extreme southern British Columbia southward to central Mexico. They are probably permanent residents in Arizona, spending the winter months hibernating in rock crevices. In the summer, groups of up to 50 individuals spend the daylight hours hanging in the rock crevices, caves and mine tunnels. Each female gives birth to one or two young sometime during June or early July. At night Pallid bats capture large insects which they carry to a secluded spot where the insects are devoured in peace. These night roosts are often around houses (in a carport or under the eaves of a patio) but they may be in a shallow cave, mine tunnel, or under a bridge. This is the species of bat that is most often encountered by residents of the suburbs of Tucson.

Collection 8 was from an abandoned mine tunnel in Picacho Peak. (Figs. 10 and 11) This was a colony of Cave myotis bats *(Myotis velifer).* (Figs. 12 and 13) During the summer of 1957 this colony numbered about 5,000 but during the summer of 1958 only about 100 lived there. When collections 8 and 31 were made a hooded skunk *(Mephitis macroura)* was seen each time. When the last collection was made a dead skunk was found and another skunk was observed jumping up the wall trying to capture bats. This skunk was killed but was not found to have rabies. (Fig. 14)

These bats apparently foraged at night for insects over the nearby Marana valley. Cases of rabies have been diagnosed in recent years in this area in dogs and wild animals.

The Cave myotis bat *(Myotis velifer)* has a general color of dull sepia or drab dorsally and is paler ventrally with white hairs on the sides

8. Rabid Pallid Bats were Taken From Roof of This Cave for Collection No. 5.

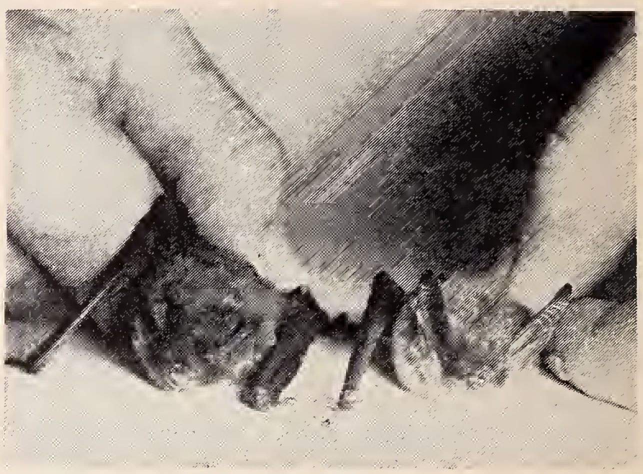


9. Pallid bat (Antrozus pallidus)

10. Collection No. 8 Which Contained Rabid Cave myotis bats Was From an Old Mine Tunnel Halfway up This Mountain.

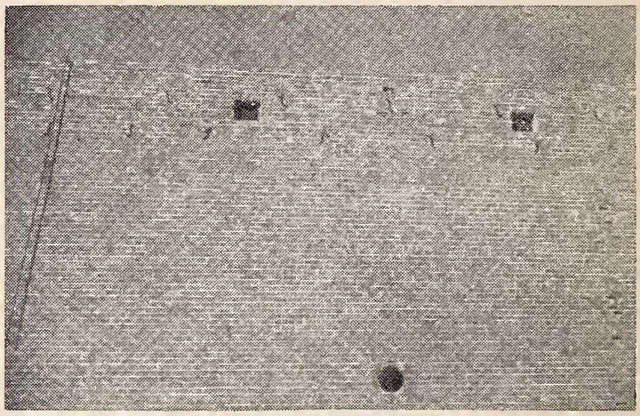
11. Entrance to Mine Tunnel Where Collection No. 8 Was Made.

12. Cave myotis bats on the Ceiling of Cave.

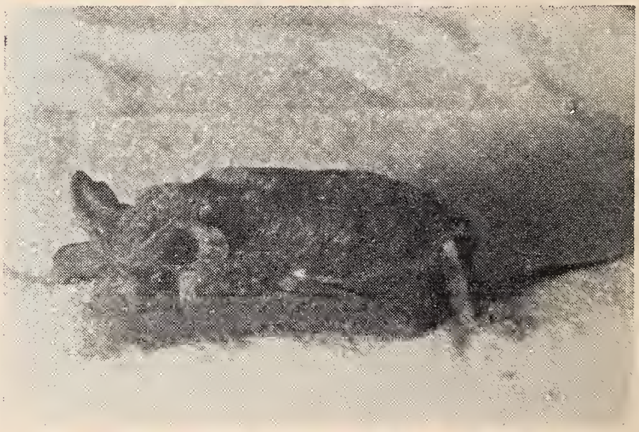


13. Cave myotis bat (**Myotis velifer**) on left and Long-eared myotis bat (**Myotis evotis**) on the right.

14. Skunk Shot in Mine Tunnel While Trying to Capture Bats. Collection No. 8 Containing Rabid Cave myotis bats was From This Tunnel.



15. Rabid Mexican free-tail bats Were Taken From the Attic of This Building for Collection No. 16.



16. Mexican free-tailed bat (**Tadarida braziliensis mexicana**).

of the abdomen. It is extremely common in southern and western Arizona. Maternity colonies of several thousands of individuals congregate in caves and mine tunnels in April and May. Here a single young is borne by each female sometime in June. After approximately six weeks the young are large enough to fly. By late September the maternity colonies break up and few Cave myotis bats can be found anywhere in the state until the following spring. Although several thousand bats of this species have been banded in southern Arizona in the past six years, to date none of these have been recovered in the winter months. It is thought probably that they migrate into Mexico during the winter.

Collection 16 was taken from the attic of an old building in Jerome, an almost abandoned copper mining town. (Figs. 15 and 16) Residents reported large colonies had been seen in old buildings each summer in this part of town for at least the past five years. The bats were observed to leave each fall.

The only species collected was the Mexican free-tail *(T. brasiliensis mexicana)*. This species is medium-sized with low fleshy ears that extend forward over the snout and with the posterior half inch of tail extending beyond the naked interfemoral membrane. It has a wingspread of approximately 10 inches. Mexican free-tails occur in western North America from central Utah and northern Oklahoma southward throughout Mexico. In the summer months the female free-tails congregate in large numbers in mine tunnels, open caves, under bridges, and in attics and crevices in the walls of buildings. In these summer aggregations of females, known as maternity colonies, the females each give birth to a single young. Few bats of this species are found in the state in the winter. Banding studies under way indicate that many of them spend the winter in Mexico.

This colony very likely foraged nightly for insects over the Verde valley, a nearby agricultural area to the east. We received reports of dogs and cats killing bats in Cottonwood, a town 9 miles away. 3½ months before collection 16 was made, a Hoary bat *(Lasiurus cinereus)* was killed by a fisherman who was bothered by its repeatedly flying too near him in the daytime. He was bitten by it and laboratory study revealed it was rabid. This site was 25 miles east of Jerome. Occasional cases of rabies in wild and domestic animals are reported from the Verde valley. A week after collection 16 was made at Jerome, 16 miles east of Cornville, a rabid cat bit a child. This cat had been observed for several weeks previously trying almost daily to catch a bat that spent the days on the ceiling of a fruit storage cave .The bat could not be found after this episode was reported.

During 1958 there was a sizable outbreak of rabies in foxes between Superior and Miami. We have had reports of foxes being seen in old mine tunnels where bats were also seen in the Superior area. We have not had time to collect and study bats from this area.

Considering the vast geographic area and the millions of bats living in the area, obviously this study was only a superficial sampling. In spite of this we believe that these studies give some indications that rabies in bats is a public health problem in Arizona.

SUMMARY

A total of 552 bats were gathered in 31 collections from 16 sites in central and southeastern Arizona during the last half of 1957 and the first half of 1958. Nine species of bats were represented in the collections. By the mouse inoculation technic rabies virus was isolated from the following species: Big brown bats *(Eptesicus fuscus)*, Mexican free-tail bats, *(Tadarida brasiliensis mexicana)* Cave myotis bats, *(Myotis velifer)* and Pallid bats *(Antrozus pallidus)*. At least 13 different bats were found to be infected with the rabies virus.

ACKNOWLEDGEMENTS

Thanks are extended for assistance rendered by Nancy Miller, B.S., Thelma Fetherolf, and V. H. Ueckert, D.V.M., M.P.H.

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Evaluation of some "Recent Advances" in The Management of Carcinoma of the Cervix Uteri

by

Howard B. Hunt, M.D.*

Omaha, Nebraska

AS A MEMBER of the Assembly I wish to express sincere appreciation to the American Cancer Society, Arizona Division, for sponsoring and arranging this symposium. I attended the meeting a year ago at Tucson and found it to be highly informative and presented in a most congenial atmosphere. This year I am honored to appear along with speakers of international reputation such as Dr. Brunchwig. One of my surgical colleagues jestingly identified the Brunchwig operation for me as the procedure in which the surgeon takes out everything and then fills the patient up with Gelfoam. As a radiotherapist, I am grateful to Dr. Brunchwig(1) for the pioneer work which he has done in an effort to further control disease in those unfortunate patients who still have recurrent and residual carcinoma. We must admit that many patients with carcinoma of the cervix are not cured by radiotherapy just as many are incurable by radical surgery. As radiotherapists we feel that pelvic exenteration has a definite but rather limited role in the treatment of selected patients with carcinoma of the cervix as we shall detail later.

Progress In Cancer Control

Progress in the control of carcinoma of the uterine cervix has been among the most outstanding accomplishments in the conquest of cancer during the past thirty-five years. Such progress has resulted from a lowered incidence of the disease, detection of the disorder in its pre-invasive stage, earlier diagnosis of invasive cancer and in general more effective treatment. The public and professional programs of the American Cancer Society have contributed significantly to this program. The overall death rate from uterine cancer has declined progressively from 18 per 100,000 total population in 1932-34 down to 10.5 during 1950-52 in Massachusetts. Likewise in Nebraska the death rate from uterine cancer has declined from 11.5 in 1944-48 per 100,000 total population down to 6.6 during 1954-57.

This reduction of deaths from uterine cancer has occurred almost exclusively in carcinoma of the cervix and results primarily from the treatment of patients at earlier stages of disease. Furthermore there is less carcinoma of the cervix now than twenty years ago, apparently related to improved economic status with better genital hygiene. Other conrtributing factors are repair of cervical lacerations following child birth, biopsy and elimination of questionable lesions of the cervix and circumcision and better genital hygiene in the male. As a result of the public education program of the American Cancer Society women are reporting to doctors on the occurrence of any unusual vaginal discharge or bleeding as well as for cancer detection examinations. More doctors are doing complete pelvic examinations as part of the routine physical and check-up examination of female patients.

The absolute five year survival rate for patients with invasive carcinoma of the cervix seen at the University of Nebraska Hospital has increased from 20.5 per cent for the period 1931-36

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Presented — Arizona Cancer Seminar — 1959

up to 55.8 per cent for the period 1948-52(2), (Table 1). This improved survival rate has resulted primarily from more patients with early disease and to a lesser degree from improved therapeutic procedures. Combined Stage I and II cases increased from 26 per cent during the early period of 1931-36 up to 72 per cent for the period 1948-52. The incidence of advanced Stage IV cases remains disturbingly high, being about 12 per cent in the University series and about 8 per cent in private practice. The advanced group is represented primarily by post-menapausal widows often brought to the doctor by their family because of the soiling of bed linens, malodorous discharge, hemorrhage, urinary retention or pain. This persistence of Stage IV cases remains a challenge in the field of public education.

Cytologic Smears And Tissue Biopsies.

Invasive carcinoma of the cervix is preceded in most cases by an atypical dyskeratosis. When such cellular atypia progresses throughout the full thickness of the mucosa it becomes carcinoma in situ. At the in situ stage there is no extension through the basement membrane and the lesion should be curable by destruction or surgical resection. It appears that about 10 to 20 per cent of such in situ lesions progress to invasive carcinoma over a period of 5 to 10 years. In situ lesions may show no visible ulceration on examination of the cervix and are usually detected by cytologic examination of vaginal smears, Papanicolaou technique. Invasive carcinomas of the cervix give rise to ulceration or nodulation and present usually as visible lesions but are most precisely identified by tissue biopsy. Gross invasive carcinoma of the cervix gives rise to ulceration with inflammation and hemorrhage which may so obscure the vaginal smear as to result in a failure to detect such carcinoma by the cytologic examination alone.

Proper examination for the detection of cervical cancer should include first a speculum and digital examination, then cytologic smears by cervical scrapings or from the vaginal pool are indicated if there be any questionable lesion or even with a normally appearing cervix. If there be an obvious lesion of the cervix biopsy is absolutely indicated since as mentioned above, cancer cells are often obscured in smears by the attending necrosis, inflammation and hemorrhage. On the other hand pre-clinical lesions such as carcinoma in situ and some endocervical lesions may not be visible on inspection but are detected by cytologic smears. Obvious gross lesions can usually be easily and safely biopsied in the office using a sharp cutting biopsy forcep without anesthesia. Such bleeding as occurs can usually be controlled by electrocautery or by hemostatic gauze. The patient with repeatedly positive cytology and no obvious lesion presents a more difficult problem requiring a ring biopsy or quadrant biopsies of the cervix. The interpretation of tissue sections by an expert, impartial pathologist is essential. Interpretation of atypical dyskeratosis as in situ carcinoma or of in situ changes as invasive cancer will result in overtreatment of patients with these borderline changes. Such upgrading of lesions will augment the five year survival rate fallaciously. It is our belief that certain current claims for superiority of therapy based on increased five year survival rates are poorly founded. Too often the higher survival results from inclusion of dysplastic and in situ lesions as invasive carcinomas and not from some innovation or superiority of therapy. On the other hand it must be borne in mind that some lesions reported histologically as in situ may be associated with invasive carcinoma in adjacent areas, making meticulous histologic examination of the removed specimen essential. All patients showing persistent dysplasia by cytology should be carefully followed, realizing that some cases may show progressive change into neoplasia over a period of years. Histologic changes during pregnancy may simulate carcinoma giving reason for cautious consideration of a tissue diagnosis of early carcinoma in the normally appearing cervix of a pregnant woman.

Histocytologic Preselection of Therapy.

Can the suitability of a specific case for treatment by radiotherapy versus surgery be predicted with reliability from histocytologic pattern? Claims for histocytologic predictions of radiation response have been made by Glucksman (1949),(3) Graham (1947),(4) and others. Although various criteria have been proposed none have found general confirmation and acceptance by cytologists and radiotherapists. The most promising methods depend upon the progressive disappearance of carcinoma cells during the course of radiotherapy but this does not allow preselection before initiating treatment. Such methods include the serial biopsies of Glucksman, the radiation response of Graham and the D.N.A. response of Gusberg(5). The preexisting ratio of basal to squamous cells in vaginal smear prior to therapy appear to have some correlation with host-resistance, virulence of disease, age of the patient and ultimate prognosis regardless of the therapeutic method. At present there is no generally accepted evidence to warrant cytologic preselection of therapy. Cytologists who promote such thesis are unable to convey selective discrimination to their students and to other cytologists. Merrill(6) points out that the data by which Graham(7) endeavored to show correlation of sensitization response (SR) with survival rates after radiotherapy do not provide a true basis for scientific analysis. For example, patients with poor SR and early disease were treated surgically whereas those with poor SR and late disease were irradiated. As a consequence, patients with poor SR did badly when irradiated and very well when operated. This was not due to the method of therapy but rather through awarding early cases to surgery and loading radiotherapy with advanced cases. Basal response, the percentage of basal cells (good above 45 per cent, poor below 35 per cent) has been more recently proposed by Smith (8) as an index for prediction of radioresponse. In general, the basal cell count is low for in situ cases and in patients with advanced disease. Again if the in situ cases are operated and the advanced and older cases irradiated, recurrence rate and survival studies would appear to support the thesis that low basal cell count indicates unsuitability for radiotherapy. SR and basal cell count seem to offer some indication of host reaction to disease but have no general acceptance or worth as a basis for decision as to whether a given case should be treated by radiation or by surgery.

Clinical Evaluation and Individualized Management

It is generally accepted that clinical criteria are far more dependable than histocytologic patterns for selecting management of the individual patient with carcinoma of the cervix uteri. Treatment of the individual patient with carcinoma of the cervix can be best planned only after a reliable histologic diagnosis has been established, gross extension of the disease determined and the general status of the patient evaluated clinically. A combined rectovaginal bimanual examination and probing of the uterine canal are essential to evaluate the extent of disease about the cervix, down the vagina and into the paracervical and lateral pelvic regions. With more advanced disease, urographic and cystoscopic studies are required for evaluation of ureteral compression and invasion of the bladder. An x-ray film of the chest is indicated in patients with more advanced disease. A complete history and physical are essential for general evaluation of the tolerance and reserve of the individual patient. Laboratory studies would include complete blood count, urinalysis and a blood urea nitrogen in case there be any suggestion of ureteral compression.

For statistical purposes, cases with invasive carcinoma of the cervix are arbitrarily grouped under clinical Stages I, II, III and IV as defined by the League of Nations Committee. In reality

TABLE I

CARCINOMA CERVIX UTERI — 5 YEARS SURVIVAL, abs.
UNIVERSITY OF NEBRASKA HOSPITAL, 1948-52
INVASIVE CARCINOMA

Stage	*Total Cases*	*5 year surv. Cases*	*Died any cause*	*Lost to F.U.*
1	38	33-87%	5	0
2	40	22-55%	18	0
3	18	7-39%	11	0
4	15	0- 0%	15	0
All	111	62-55.8%		0
(Ra Th. alone 102, Surgery & Ra. Th. 5, Surgery alone 4)				
IN SITU, NONINVASIVE				
0	7	5	2	0

there exists a broad spectrum in degrees of extension of disease with no real sharp difference between an early Stage II and a late Stage I, or a late Stage II and an early Stage III except as it exists in the hands and mind of the examiner. Stage 0 refers to in-situ carcinoma which is really not clinical carcinoma since there is no invaison beyond the basement membrane.

Stage 0 in-situ carcinoma can be effectively eliminated by surgical removal or local irradiation. The stage and distribution of disease serve as a guide in the planning of therapy and as an index to prognosis. In practice radiotherapy or total hysterectomy with a wide vaginal cuff may be used for control of in situ lesions in women approaching or past the menopause. Younger women may be treated by total hysterectomy leaving the ovaries or by wide conization of the cervix with careful microscopic studies and continued followup if further child bearing is desired. In case radiotherapy is elected in the older patients, dosage is conservative and confined to intracavitary radioactive sources along the uterine canal and across the vaginal vault.

Stage I cases, invasive lesions still clinically confined to the cervix, are treated by radioactive sources along the uterine canal and across the vaginal vault supplemented by external irradiation to the parametria in all except the borderline cases. The addition of parametrial therapy becomes more essential with larger lesions and with disease involving the endocervix due to wider local extension and the increasing incidence of nodal metastases.

Stage II lesions have spread to the vagina and/or infiltrated the paracervical tissues. Such cases receive not only intracavitary irradiation and external irradiation but may require individualized supplementary vaginal or interstitial radioactive sources according to the distribution of disease. Special consideration must be given to the patient presenting a narrow vaginal vault or with involvement of the vesical-vaginal or rectovaginal septum. Patients presenting persistent bleeding, sepsis and other complicating problems require special consideration. Pelvic abscess usually requires surgical drainage. The incidence of nodal metastases varies from 15 per cent with early Stage II lesions up to 50 per cent with advanced Stage II lesions with corresponding variability in survival rates.

Stage III lesions with extension of disease to the lower third of the vagina or laterally to the pelvic wall require proportionally more external irradiation and a longer period of treatment to raise the dosage at the peripheries of disease. Stage IV lesions with extension of disease above the pelvis are uncontrollable. Extension to the vulva or bilateral extension of disease to the pelvic walls resolve occasionally under radiotherapy. Lesions infiltrating directly into the bladder and rectum are best managed by surgical exentration since resolution of such cancer by radiotherapy may leave a fistula.

Radiotherapy properly applied to a carcinoma of the cervix should eradicate the primary lesion and its immediate extension into the vaginal and paracervical structures in nearly all cases. Con-

TABLE II
CARCINOMA CERVIX UTERI – 5 YEAR SURVIVALS, abs.
NEBRASKA METHODIST HOSPITAL, 1948-53
INVASIVE CARCINOMA – RADIOTHERAPY (Surg.)

Stage	*Total Cases*	*5 year Survivals*	*Died any cause*	*Lost to F.U.*
1	47	41-87%	6	0
2	49	31-63%	17	1
3	31	10-32%	21	0
4	8	1-12%	7	0
All	135	83-61.2%		1
		IN SITU, NONINVASIVE		
0	5	5	With gland invasion	0
0	12	11	No invasion seen	
?	3	3	Dysplasia, In-situ?	
0?	20	19	1	

trol of metastases to the obturator, iliac and presacral nodes by radiotherapy is still questioned by some surgeons although such control has been documented by Kottmeier(9), and others. Five to six thousand rads to the lateral pelvic wall during a period of four to six weeks should be cancerocidal in some cases. Two to three thousand rads can usually be delivered by intracavitary radioactive sources. Conventional x-ray can add 2,000 to 3,000 rads more in a period of three to five weeks. Dosage to lateral pelvic nodes can be brought up to 6,000 roentgens readily on all patients through telecobalt or megavoltage therapy. Control of nodal metastases by radiotherapy is indicated by the lowered incidence of positive nodes in surgical specimens after radiotherapy as reported by Morton(10). Furthermore, the survival rates after radiotherapy for Stage I and II cases are fully equivalent to the best survival rates after surgery with radical lymph node dissection and admittedly the surgical cures include a significant number of patients with nodal metastases proven histologically. For example Brunschwig(11) reports 26 per cent of patients with nodal metastases surviving five years after surgery.

STATUS OF PARAMETRIAL RADIOGOLD, vs EXTERNAL IRRADIATION

Instillation of colloidal radiogold for irradiation of the parametria in lieu of external irradiation was initiated by Sherman, Allen and Nolan in 1950(12). The original thesis was that the radiogold particles would be taken up by the lymphatic nodes, and thereby intensively irradiate nodal metastases. Paradoxically, histologic studies have shown little or no radiogold taken up by nodes filled with cancer, whereas the normal nodes accumulate the radioactivity in high concentration. Although the beta rays from radiogold deliver an extremely variable dosage of from near 0 up to 80,000 rep in a scattered pattern, the range of the beta radiation is only 1 to 2 millimeters. Only the more penetrating gamma rays, about 15 per cent of the total radiation, may be depended upon to reach into the larger nodal metastases. The instillation of 50 to 70 millicuries into each parametrium may be calculated to deliver about 2,000 to 3,000 gamma roentgens in a spotted pattern to the peripheral pelvic tissues. Comparable dosage is delivered by conventional external x-ray therapy in a predictable isodose pattern and even higher dosage can be readily delivered by external telecobalt therapy if required. Allen, Sherman(13) and associates supplement the parametrial radiogold by one or two conventional applications of radium along the uterine canal and in the lateral vaginal recesses by a Terpogosian applicator. Werthheim hysterectomies with lymph node resection have been done about four weeks later in good risk Stage I and II cases with complications reported in about five per cent of patients consisting of genitourinary and gastrointestinal fistulae and of sciatic neuritis in some patients.

Various factors appear to contribute to the fantastically high survival statistics presented by Allen and Sherman(13) for cases treated by radium and radiogold, a three to seven year survival rate of 79.9 per cent. First, the case material is very predominantly early containing about twice the proportion of Stage I cases as shown in the comparative group treated by them with radium and conventional x-ray therapy in a previous series. Any inclusion of in situ dysplastic lesions in the radiogold series would tend to load the data in favor of a fallaciously high survival rate. With a predominance of early cases the average lesion within each stage tends to shift to earlier level with a correspondingly better prognosis. Stage IV and advanced Stage III cases unsuitable for radiogold were excluded from their series. Furthermore, eleven patients lost to follow-up and dead from other causes were excluded from the final computation whereas they should be charged against survival as in the comparable computation of absolute survival rates (See Tables I and II). Survival rates were expressed in terms of three to seven years which are not fully comparable to five year survivals. After the above statistical corrections have been made the five year survival rate for the series would seem to approach conventional results from intracavitary radium and proper external x-ray therapy. The high survival rates appear to reflect the early cases material and selection of cases rather than any definite superiority of parametrial irridiation by radiogold as compared with conventional x-ray or telecobalt therapy.

EVALUATION OF SURGICAL MANAGEMENT

Previous pelvic surgery always renders radiotherapy more difficult and less effective. Optimal central placement of radium along the uterine canal is made impossible and the small bowel lies directly above the radium placed in the vagina. The placement of radium after hysterectomy is restricted in effectiveness and also more hazardous. Vascularity of pelvic tissues has been reduced by ligation and postsurgical scarring which reduces the effectiveness of radiotherapy and increases the hazard of complications. Addition of more external radiation and the substitution of interstitial implantation of radium needles paravaginally do not adequately compensate for such anatomic and vascular deficiency following surgery. The five year survival rate for Stage I cases is reduced about ten per cent and for Stage II cases about 60 per cent by prior hysterectomy in our experience(14).

What are the possible indications for surgical treatment of cervical cancer to be considered by a radiotherapist? 1. Although in situ carcinoma is not really cancer of the cervix, it is treated primarily by total hysterectomy, particularly in young women for preservation of ovarian function or rarely by wide conization for preservation of child bearing. 2. Refusal of a patient to accept radiotherapy for early invasive cancer would require not only a panhysterectomy but also a resection of a wide vaginal cuff and a bilateral lymph node resection in order to be at all comparable to proper radiotherapy. 3. The association of early carcinoma of the cervix with other gross pelvic disease such as an ovarian tumor, fibroid tumor or pelvic abscess which warrants surgery. 4. Recurrence of cervical cancer in an area previously adequately irradiated. 5. Direct infiltration of cancer through the bladder or rectum with disease still confined to the pelvis warrants consideration of pelvic exeneration.

Brunschwig(11) reports a five year survival rate of 54.6 per cent for well selected surgical cases. About 25 per cent of all primary cases were fully suitable for surgery. The overall five year survival rate for all primary cases seen was 44.2 per cent as compared with a comparable survival rate of 55.8 per cent for our state cases and 61.2 per cent for our private cases unselected and treated by radiotherapy. Our cases were treated by intracavitary radioactive sources and orthovoltage x-ray through the parametria. The overall five year survival rate for clinic patients has been reported by the Roswell Park Hospital as(15) 56.7 per cent and by the Francis Delafield Hospital(15) as 55 per cent.

Dr. Meigs(15) reports 81 per cent five year survival rate for Stage I cases treated by radical hysterectomy and lymph node dissection as compared to 87 per cent for 85 cases treated by radiotherapy in our current series of Stage I cases (Tables I, II). All in situ and equivocal lesions have been excluded from our Stage I group. The five year survival rates following radiotherapy for Stage I lesions at Roswell Park Hospital are 88 per cent and at the Francis Delefield Hospital 89 per cent. Meigs shows a five year survival rate of 58.7 per cent for selected Stage II cases as compared with an absolute survival rate of 60 per cent for our combined series (Table I, II) of 89 unselected Stage II cases treated by radiotherapy, 55.8 per cent for Roswell Park and 71.3 per cent for Delefield also treated by radiotherapy.

Our overall five year absolute survival rate for 111 state cases treated during 1948-52 at the University of Nebraska Hospital (55.8 per cent) and 135 cases treated in private practice (61.2 per cent) with a total of 246 cases during 1948-53 was 59 per cent. All cases except one were followed five years and more. All cases dead from any cause or lost to follow-up were charged against survival. In situ cases have been excluded from Stage I cases and detailed separately. Our data appear representative of current survival rates for invasive cervical carcinoma Stages I and IV treated by intracavity radioactive sources and external irradiation.

SUMMARY

1. The death rate from uterine cancer has declined from 11.5 in 1944-48 per 100,000 total population down to 6.6 during 1954-57 in Nebraska.

2. Patients with carcinoma of the cervix uteri are being diagnosed and treated at earlier stages which primarily accounts for the definitely rising five year survival rate. The American Cancer Society has contributed significantly to this improvement through its program in public and professional education.

3. Proper examination for detection of cervical cancer includes a speculum examination, Papanicolaou smears as indicated and tissue biopsy of any obvious lesions of the cervix.

4. Clinical criteria are the most dependable guides in selecting the best management for in-

dividual patients with invasive clinical carcinoma of the cervix uteri.

5. Surgical Management of invasive carcinoma of the cervix warrants consideration in patients who refuse radiotherapy, have other pelvic disease warranting surgery, show recurrence of cancer in areas previously adequately irradiated and who have cancer infiltrating into the bladder or rectum.

6. Even superb surgical management consisting of total Werthheim hysterectomy with radical lymph node dissection has not proven superior to conventional radiotherapy in the overall control of invasive carcinoma of the cervix.

7. Metastases to pelvic lymph nodes from carcinoma of the cervix uteri can be effectively controlled in some cases by conventional radiotherapy.

8. The overall five year absolute survival rate for 246 unselected cases (111 state, 125 private) of invasive carcinoma of the cervix uteri treated by radiotherapy was 59 per cent for 1948-53.

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AMA CLINICAL MEETING

"Freedom of Choice" Gets New Life

The following was adopted: "Lest there be any misunderstanding, we state unequivocally that the AMA firmly subscribes to freedom of choice of physician and free competition among physicians as being prerequisites to optimal medical care. The benefits of any system which provides medical care must be judged on the degree to which it allows of or abridges such freedom of choice and such competition."

Another Forward Step

Another progressive step was taken in regard to the so-called Relative Value Studies (Scales) (fixed fees) when the Delegates voted very apparent "softening" support. The Delegates resolved that they "approve *in principle the conducting of* Relative Value *Studies* (emphasis theirs) by each state medical association, rather than a nationwide study or a series of regional studies by this Association." The resolution removed the AMA from what could have been interpreted to be a position of mandating studies by delegating the decision to the various states with the following words: "That this Committee (on Medical Practices) be authorized to assist as noted previously, those states *desiring to undertake Relative Value Studies*" (emphasis theirs). Studying the Reference Committee discussion, and reading between the lines, one happily interprets the resolution as a mild slap on the wrist to the overzealous proponents of this fee-fixing device, and an admonition to them to stop propagandizing and merely offer assistance only to those who voluntarily decide to undertake the "Studies" — and "Studies" is underlined in both instances. This is all to the good and we hope the action will become a strong, piercing beacon light that will show the grave dangers inherent in the foolish and needless "Studies," "scales," and "fixed fees."

(AAPS Information Bulletin No. 19-59)

CONGRESSIONAL HEARING ON VA CARE

The Delegates approved in principle the Maryland resolution recommending a congressional hearing on the need for limitation of Veterans Administration care to service connected disabilities only, and referred the resolution to the Council on Legislative Activities for study and recommendation.

(AAPS Information Bulletin No. 19-59)

Papago Indian Medicine

by

Joseph G. Lee, M.D.

"Only the ignorant scorn . . . the wise, understand." — Poe

DO PAPAGO medicine-men really have a cure for rabies in animals and in men? How many centuries have they vaccinated against small pox? Just how effective are their quantities of native herbs as medicines? Could Indian medicine-men have secrets which science might well investigate?

These are unanswered questions, but ones which raise their heads when one sees the strange equipment of a medicine-man's basket and the many Arizona plants which they and their Indian followers still use trying to cure all manner of ailments.

There is a universal natural factor which operates in both modern medicine and that practiced amongst the primitive peoples of the world. It is an emotional factor of belief or faith; as the ultimate force, it may operate as religious ecstasy to cure as at Lourdes an occasional simple, uncomplicated soul who was deemed so incurable as to have been given up by doctors of medicine.

In most medical treatment a very special emotional relationship exists between physician and patient which is known as "rapport." Rapport is by no means confined to medicine, but exists in all close relations, such as may ocur between teacher and pupil, leader and follower. Without it nothing is deeply significant. When rapport is present immense power is given to the medicine-man — sufficiently so that patients are helped or cured quite independently of special method. From the beginning of time this power has been used to relieve symptoms, to inspire courage and to aid in bearing burdens.

The blindness to the meaning of rapport on the part of the medical profession has been nothing short of extraordinary. The force which it represents has been better grasped by the quack healer and the primitive medicine-man, who knows that it can influence people quite regardless of the worth of his professed agency of cure. If it were necessary to choose between method and rapport in treatment there is little question that rapport would be the more useful agency. To be sure, no one knows what rapport consists of. There is magic and mystery in it. Its absence leaves words of logic and wisdom fruitless and sterile. With this term is often the implication of the dynamic, authoritative, and dominant leader . . . such as the Indian medicine-man.

My guide at the University of Arizona once showed me the contents of the Navajo medicine-man's bag . . . leaves, bits of rock, a frog's leg, toys, trifles. "Do you see anything funny about that?" he said. "I have seen too many strange things about Indians to see anything funny," I replied. "That is psychoanalysis . . . centuries before we ever heard of it." The Indian conceives the created world as a vast harmony . . . a 'not a sparrow falls . . .' If you are sick, it is perfect fitted whole. He believes literally that 'not a sparrow falls . . .'. If you are sick, it is because you have fallen out of harmony. The medicine-man's task is to find out with what you have ceased to fit. "Is it the bird, the rock, the tree, the coyote?" Setting up the rhythm or harmony or rapport which induces understanding, he asks and asks until he finds out where the seam has ceased to fit . . . just as does the psychoanalyst.

The white man may be amused that the thigh bone of the wildcat is used for earache, the owl's feathers against illnesses caused by ghost or "love trouble," and a bundle of ocotillo sprouts against baldheadness, which is serious, for "if you get baldheaded it goes down to your heart and causes heart trouble."

But the serious white man cannot but wonder what the medicine-man uses against rabies. Something is done but no Papago will tell. A few years ago an Indian woman was badly bitten and chewed by a "mad" coyote . . . which was killed and its head sent to the Arizona State laboratory where its brain was reported to contain Negri bodies. The woman refused the Pasteur treatments by the white doctor on the reservation, preferring aid from the medicine man of her village. The white doctor, as a rule, is never able to make contact with the medicine-man. Weeks went by, her wounds healed quickly. Months went by and she showed no symptoms of human rabies. What happened when the medicine-man treated her?

"Our treatment is all right for Indians, but it would not do for white people," an Indian girl answered when questioned. "The medicine-man draws a circle — but I cannot tell you," she broke off suddenly on the verge of revealing what happened.

Something is done, however, for there have been too many cases of "mad" dogs and coyotes to shrug off the matter. In northern Sonora the Papago people cut and burn crosses in their dogs' foreheads during a medicine-man's treatment after the dogs have been bitten by mad animals. There, and on the southern Arizona reservation the people receive some strange treatment about which white men know only that it begins "with drawing a circle!"

What about smallpox? A few years ago when the reservation had a smallpox scare, nurses and doctors had no difficulty vaccinating 400 children. The Indians knew all about vaccinating. All the elders proudly displayed on their wrists scars from their own vaccinations.

They either couldn't or wouldn't tell us how many, many years they have been vaccinating themselves. All the old people agreed it had been 'many years.' They inform us that their medicine-men take the well Indians to the bedside of a person sick with smallpox. There the medicine-man dips a devil's claw into a pustule on the person's body and then draws the claw over a small scratch on the well person's wrist. The result is a slight sickness for a few days; but they say "it is better than white man's way; it doesn't make us sick."

Some of the Papagos have hinted that they learned vaccination from Indians in Mexico, who perhaps learned it from Mexicans. That could be historically correct for vaccination was known in early times. Records state that the Spainards brought smallpox to the Americans in the 16th century. They may also have brought the European peasants' system of vaccination. Perhaps the very priests, Father Kino, Garces and the many others, who introduced them to Christianity and smallpox, taught them vaccination. Who knows?

The Papago people are far keener than most believe. There are three kinds of medicine-men: those who treat diseases with natural herbs; those who chant and sing with a strange array of symbolic items to break the spells causing illness; and those called "bone doctors," who have established a reputation for efficient skill in setting bones, broken. All three are "Mah-kai Ootahn" or Papago doctors. Many of the Indians on the reservation still prefer their aids to white doctors, but slowly and gradually the white doctors are being sought. Nurses get their patients to more readily take white man's medicines by using the Papago name for the drug the medicine contains.

The "Mah-kai Ootahn" using herbs has a wide variety to choose from. Creosote, palo verde and mesquite provide favorite medicines. A tea made from a "girl" creosote root, boiled with fat and applied warm, is good for earaches. The creosote bush provides them their antiseptic and is used in powder form for sore eyes or open wounds, as a salve (with animal fat) for sores, the inner bark for de-worming and an outer parasitical growth becomes an opiate or sedative. Tea from creosote leaves is used to reduce fever, stomach ache, labor pains in childbirth and as a laxative.

Palo verde and mesquite have as many forms and uses. But in addition there are: manzanita tea to induce labor pains; burnt wheat seeds to cure burns; saguaro seeds in a gruel for sick babies; "alle gugul" root for cramps and after-birth pains; cachanilla used as a cure for syphilis; snake weed tea for snake bite; night blooming cereus for bladder trouble and diarrhea; tansy mustard seed for a stimulant and appetizer.

Many of these plants are also used for foods as salt sage for seasoning; jellies from all the cactus fruits; buds of the cholla pickled as a relish and as a salad; saguaro fruit as a syrup, jelly and candy; and the seeds for a sweet cake; pepper grass seeds or "shohowat" as lemonade-like drink, and pumpkin seeds parched, salted and eaten as nuts.

The bone doctor has a whole series of efficient splints for all meanner of breaks in bones. These are fashioned from saguaro ribs, polished very smooth so they will not make flesh wounds, and shaped to fit wrists, upper and lower arms and legs. What they can do with broken collar bones, skulls, spines or hips is guesswork on the part of nurses and doctors.

The equipment of the medicine man who chants and sings is almost the most interesting. His basket of symbolic cures and spell breakers is no less sensible than the cures used in England in the 17th century when toads, snakes, dung, minerals and many others were mixed into liquids and taken internally.

On the word of one of the medicine-men some of the most potent and dangerous items have great power. In fact, their power is so tremendous that all the articles must be wrapped in rawhide and not touched except by a medicine-man. These items include a deer's tail used for "the headache that goes through the eyes to the brain"; "newee" or buzzard feathers, used against boils; hawk's feathers or "visak" for nosebleed; "kahuan" or badger clay for swelling of neck glands; a crystal stone for heart trouble, fatigue and loss of appetite; eagledown for rain making and Tizwin ceremonies; "Moh-k," or a lock of Apache hair taken by the native who killed the Indian and used by the medicine-man to keep the killer safe "unto three generations" from the sickness which the dead Apache might visit unto him and his descendants.

There is an amusing and truthful story told on the reservation about one of the attempts to cure a sick man from a ghost illness. The medicine-man went to the sick man's hut only to hear him say: "It is no use. Let me die. I did wrong to a man now dead. He brings me sickness." He had it bad, and that's not good. The medicine-man learned the location of the grave and said he would placate the restless, mean spirit causing the illness. He set off to the grave with some assistants. But a group of boys had overheard, and since they knew how Americans celebrate Halloween, they too sashayed toward the site in the dark. As the medicine-man approached the grave, alone and chanting, to his terror a grinning, yellow face shot-up over the grave. He screamed in horror and fled back to Sells, leaving behind the urchins and their delighted pumpkin. Whether the sick man recovered is not known.

Owl feathers are also used against illness caused by ghosts that trouble the living, producing heart trouble or "love mania." The feather is used in connection with a carved symbol of a man to represent the ghost.

Some of the Indians believe that "sea-foam" or "shu-dtak" is good for "inside pain" and "horse's sickness." The medicine-men claim to secure the solidified sea-foam from the Gulf of California, but it looks more like a piece of porous skull bone. Rabbit tail is used against "that kind of sore" or cancer. Butterfly and sun symbols also have their purposes, as does a quail skin stretched over a dime store chicken, which is said to relieve eye trouble. Of course, there is the ocotillo sprouts bundle for the baldheaded. The sprouts are the symbol of a porcupine and "one must never see a porcupine face to face or look at him," for more than health reasons.

A twist of hair from a wild horse's tail is a foil for insanity, as "insanity is likely to attack anybody working around horses" and the devil takes the man who works with horses. Rattlesnake weed and La Golondria plants have been investigated to learn their efficiency in curing rattlesnake bites. It has been shown that canutillo plants contain ephedrine, which always has been imported from China. It is this shrub which is used for syphilis, rheumatism and other ills.

To me the study of the Indians has proved an endless fascination. Their reservations extend for many miles across the cruel splendor of a barren land. And so it reaches . . . vast, silent, mysterious.

I watched an Indian gazing into the distance. His narrowed eyes surveyed the vastness steadily, his chin uplifted. His profile seemed to me equivalent to the rugged land smoothed by space. In this sombre figure I saw the calm dignity of their race. The loneliness, the enforced simplicity, and the precariousness of life faced with perpetual drouth have made them sturdy and resourceful, and have implanted in them an abiding sense of the tragic nature of man's fate.

Thioridazine (Mellaril) In General Office Practice

by

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IN THE past six years a group of drugs known as tranquilizers have been introduced into medicine for the treatment of neuroses and psychoses. Some brief comments on these psychotropic compounds will be made regarding their chemical structure and pharmacological properties as well as a classification of these psychopharmacologic agents, as follows:

1. Those derived from phenothiazine
2. The rauwolfia alkaloids
3. Those derived from diphenylmethane
4. Glycerol derivatives

The phenothiazine derivatives are considered by many as being among the first tranquilizers for the treatment of emotional disorders. The rauwolfia alkaloids, which are considered to be among the early tranquilizer drugs, are not used as widely today in the treatment of emotional disturbances as in the past. The phenothiazines appear to have replaced the rauwolfia alkaloids for the treatment of central nervous system disorders, but their use still plays an important role in the treatment of hypertension. The diphenylmethane derivatives appear to have several pharmacologic actions such as tranquilizing, antihistaminic and anticholinergic. The glycerol derivatives are considered as tranquilizers but originally were muscle relaxant drugs.

This report is concerned with Thioridazine (2-methylmercapto-10-[2-(N-methyl-2-piperidyl) ethyl]-phenothiazine),* a new phenothiazine which appears to be unique as a phenotropic drug because it does not produce the usual extrapyramidal symptoms, and no cases of true Parkinsonism, blood dyscrasia or liver damage have been reported. Thioridazine differs in some aspects chemically from the usual phenothiazines because of the substitution of the thiomethyl group in place of the halogen which is ordinarily situated on the main nucleus, and the substitution of the piperidyl radical in place of the piperazine or dimethyl radicals on the side chain. It is said that the substitution of the thiomethyl group and the piperidyl ring accounts for the difference in action of Thioridazine (see Figure I.)

Courvoisier et al.(1) showed in animal studies that Mellaril does not produce catalepsy in various animal species when compared with other phenothiazines. Taeschler and Cerletti(2) showed pharmacologically that Mellaril depresses the temperature-regulating mechanism to a much lesser degree than other tranquilizers,

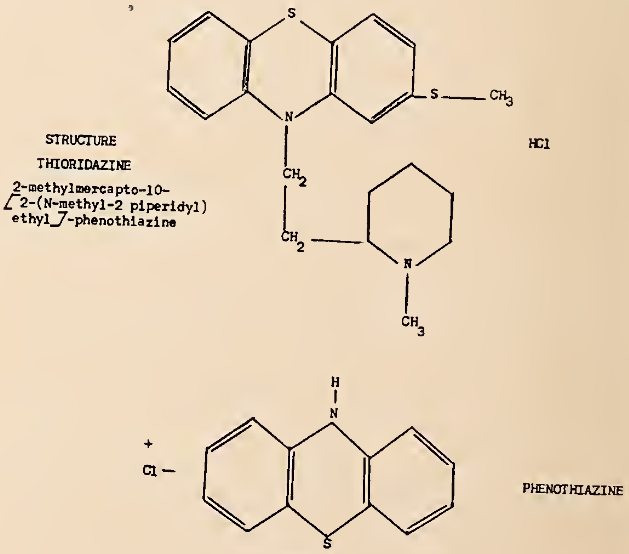

Figure I

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*Available as Mellaril from Sandoz Pharmaceuticals that it inhibits motor activity due to fasting or in amphetamine-induced hypermotility, potentiates anesthesia, reduces emotional tension of the "flight reflex." It does not have a pronounced anticholinergic and antihistaminic effect, it has moderate adrenolytic and spasmolytic effects and does not posses a significant antiemetic effect. Haley et al. (3) reported that Thioridazine has adrenergic blocking effect, is slightly antihistaminic and has very weak atropine-like activity but no ganglionic blocking effect. Swinyard et al.(4), comparing Thioridazine with Chlorpromazine, showed that Thioridazine abolishes conditioned escape response, reduces amphetamine toxicity, decreases spontaneous motor activity, lowers body temperature, reduces the low frequency electroshock seizure threshold, prevents the tonic extensor component of maximal audiogenic seizures and prolongs hexobarbital sleeping time. In their experiments, using large doses of oral Thioridazine in mice, there is a difference in the dosage of Thioridazine and Chlorpromazine required to produce overt evidence of minimal neurotoxicity. They found that Thioridazine is approximately half as toxic as Chlorpromazine.

Kinross-Wright(5, 6) reported his results with Thioridazine in a large series of institutionalized and ambulatory patients. He found Thioridazine to be well tolerated, and that it exhibited no toxicity in the dosage range employed. He was particularly impressed with the absence of Parkinsonism and other extrapyramdial symptoms, and no cases of blood dyscrasia or liver damage were observed.

Glueck(7), Cohen(8), Remy(9), Ostfeld(10), Clark(11) and Haug(12), also found that Thioridazine is a potent phenothiazine and that it is singularly free of troublesome side effects.

METHOD

Fifty-two private ambulatory patients were selected for observation. All had functional complaints due to anxiety and a few also had organic disease. Fifteen patients were male with an age range from 14 to 65 years, and 37 were females with an age range from 20 to 84 years. A double-blind technique was employed with three dosage forms: 1. One group containing 10 mg. tablets of Thioridazine and placebo. 2. Another with 25 mg. tablets and placebo, and 3. A third group with 50 mg. tablets and placebo. Each patient was directed to take one tablet of the dosage form after each meal and return visits were scheduled at 2 to 3 week intervals to observe the results and to replenish the medication. All patients were started on Thioridazine or placebo in random fashion and the different strength tablets were used in ascending order. Neither the patient nor the physician knew which was the therapeutic tablet or placebo. While it is true that a fool-proof double-blind study is difficult to achieve, especially in the treatment of functional complaints, it is the best available procedure for the objective evaluation of a chemotherapeutic agent. It is felt, however, that the random administration of a coded drug and placebo, the use of progressive dosage and consideration of other factors such as environment,

TABLE I

RESULTS WITH MELLARIL (THIORIDAZINE)

DIAGNOSIS	NO. OF PATIENTS	AGE	MELLARIL RESPONSE		PLACEBO RESPONSE		DOSAGE & DURATION	SIDE EFFECTS	
								MELLARIL	PLACEBO
Fatigue (not induced by exertion) - 45	52	14 - 65 (male)	MALES		MALES		30 to 75 mg. daily	4 cases of drowsiness	1 case of vomiting
			GOOD	POOR	GOOD	POOR			
Insomnia - 36	MALE 15		14	1	3	12			
		20 - 84 (female)					2 to 6 months - average 3 months	1 case of vomiting	
Vague digestive disorders - 18	FEMALE 37		FEMALES		FEMALES				
			GOOD	POOR	GOOD	POOR			
			34	3	12	25			
Anxiety and apprehension - 46									
Severe tension headache - 2									
Duodenal ulcer - 2									
Hyperpiesia - 4									
Alcoholism - 2									

psychotherapy, etc. have, in the main, precluded misinterpretation of results in this series.

The duration of therapy was from two to six months. Many of the patients had more than one symptom and the conditions treated included fatigue (not induced by exertion) and insomia, vague digestive disorders, anxiety and apprehension due to various causes, severe tension headache, duodenal ulcer, hyperpiesia and alcoholism. The relief of symptoms with Thioridazine was noteworthy in the majority of patients without producing side effects which interfered with therapy. It was observed that relief was almost in direct proportion to the dosage of Thioridazine employed. In some cases, 10 mg. after each meal resulted in a relief of symptoms. When the dosage of Thioridazine was increased to 50 mg. three times daily, there was a relief of anxiety but a few mild reactions occasionally followed. Twenty-five mg. tablets after meals invariably produced good results, and practically no side effects. (See Table I).

SIDE EFFECTS

One female patient experienced vomiting with 25 mg. tablets of Thioridazine; another female patient vomited with a placebo, and there were three cases of drowsiness, presumably due to excessive dosage. The drowsiness resembled the delayed mental and motor activity often seen after moderate doses of barbituric acid drivatives. The drowsiness subsided completely about 24 hours after medication was discontinued. It is noteworthy that there was no evidence of Parkinsonism or personality changes, and no cases of jaundice or photosensitivity. Routine hemograms, urinalysis and other laboratory tests were normal before and after therapy. Blood pressure levels were not significantly changed except in three patients with hyperpiesia whose blood pressure was reduced about 30 to 40 mm. Hg. systolic and 5 to 10 mm. diastolic. These patients previously demonstrated about the same reduction in blood pressure with other tranquilizers. One patient with hyperpiesia was much less tense and slept better with Thioridazine although his blood pressure measured 180 mm. Hg. systolic. No cause for the hyperpiesia could be found.

DISCUSSION

The availability in recent years of numerous psychotherapeutic drugs, especially the phenothiazine derivatives, for the treatment of functional disorders and for relieving the emotional component in organic disease, represents one of the great advances in therapeutics. The multiplicity of phrenotropic drugs, many related to one another, with similar claims, has created a confusing situation for the physician. Welsh(13) has stated that the real objective of psychotherapy with drugs is to induce an improved mental state, irrespective of what subjective symptom or objective sign is being treated. This should be done with agents that produce no undesirable subjective responses, are lacking in toxic side actions and exert no summative effects with other drugs unless the latter are beneficial. Thioridazine was chosen for this study because of the reported wide margin of safety. This was borne out in this study.

SUMMARY

1. In a double-blind study, 52 ambulatory patients were given Thioridazine for a variety of functional disturbances for a period of 2 to 6 months.

2. Thioridazine, in doses of 30 mg. to 75 mg. daily, after meals, was well tolerated. It relieved anxiety, apprehension and other functional complaints without producing excessive sedation.

3. No cases of Parkinsonism, extrapyramidal symptoms, blood dyscrasia or liver damage were observed in this series of patients. Four cases of drowsiness and vomiting were presumably due to doses of Mellaril greater than required.

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CASE REPORT

Argentaffine Tumour of the Ileum

A. Graham, M.B., M.R.C.O.G.

Consultant Gynaecologist

and

I. S. Stewart, M.D.

Consultant Pathologist

From the Victoria Hospital, Keighley

ALTHOUGH the argentaffine tumor of the small intestine is a rare lesion and the number of cases reported in the literature still less than five hundred, the reporting of an isolated case is no longer justifiable unless there is some feature of interest to the clinician. The case described here was seen first by a general surgeon, considered by him to be an ovarian lesion and was then handed over to the gynaecologist. As this has happened once, and in all probability on previous occasions the details may be helpful should it occur again.

Case History: A married nulliparous woman of 40 years attended the surgical clinic complaining of vague abdominal discomfort for some months. Her menstrual periods had been irregular up to the age of 38 but regular since. When examined she was found to have a hard mobile tumour in the abdomen. This could be moved up as far as the umbilicus and also down into the pelvis. Vaginal examination suggested that the tumour was attached to the left broad ligament and it was thought to be an ovarian cyst.

When examined by one of us (A. G.) these findings were confirmed and a diagnosis of ovarian cyst made.

Operation: The abdomen was opened through a lower midline incision. There was a small uterus bearing a small subserous fibroid. There were small cysts in the left ovary and it and the Fallopian tube were bound down by dense adhesions. There was a hard lump in the ileum about 90 cm. above the ileocaecal valve and three small hard glands were found in the adjacent mesentery. No metastases could be distinguished in the liver spleen. Approximately 30 cm. of bowel, including the tumour and the glands. was excised and an end to end anastomsis carried out. The left ovary and Fallopian tube were then removed. Convalescence was uneventful.

Pathology: The preserved segment of small intestine was 22 cm. in length. Near its centre the wall had been opened exposing a globular tumor 4 cm. in diameter. On the outer aspect an extension of equal size expanded the mesentery.

Sections showed what was considered at first to be a very active adenocarcinoma in which there were not only numerous clusters of aberrant glandular structures but also wide areas solidly packed with anaplastic cells with no structural arrangement. Subsequently however sections stained by Levaditis method showed that the tumour cells were packed with characteristic argentaffin granules. All three lymph glands contained tumour deposits which also gave these appearances with Levaditis stain. Control sections made from a known adenocarcinoma failed to show granules.

Discussion: These tumours are very slow growing and may remain stationary for long periods (Cope, 1930). Over half of them are only discovered at autopsy and the great majority of the remainder develop symptoms of obstruction and require operation (Ariel, 1939). Over half of the cases show multiple growths (Willis, 1953). Rare events are the discovery of a painless abdominal mass, such as in this case, perforation (Cooke, 1931, Stewart and Thompson, 1951, Simpson and Stewart, 1959) and intussusception (Ariel, 1939, McCartney and Stewart, 1959). The secretion of 5 Hydrovytryptamine by these tumours, the "flushing" syndrome associated with it and the identification of the chemical in the urine in a modified form (Biorck et al, 1952) offer together a further means of diagnosis.

In at least one previous case (Simpson and Stewart) a jejunal tumour was felt in the recto vaginal pouch and had not the urgency of the condition demanded immediate laparotomy this patient might also have passed into the hands of the gynaecologist.

Summary: A case of argentaffine tumour of the ileum in a woman if 40 years was accepted as one of ovarian cyst by both surgeon and gynaecologist, the correct diagnosis only being made after operation and histological investigation.

Brief reference is made to the relevant literature.

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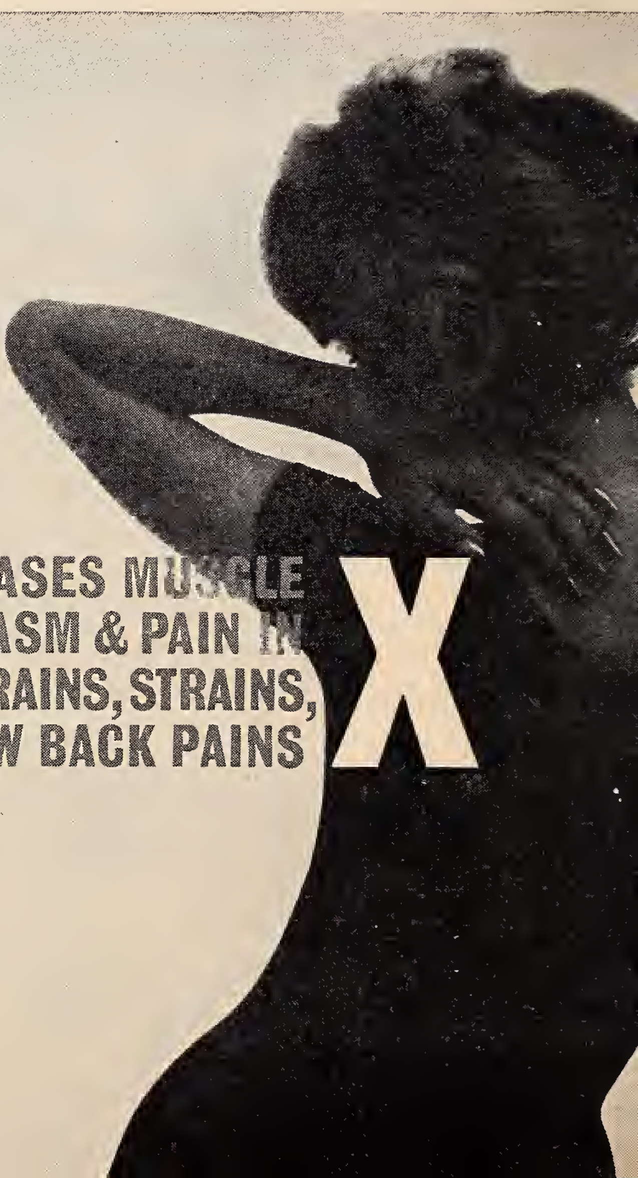

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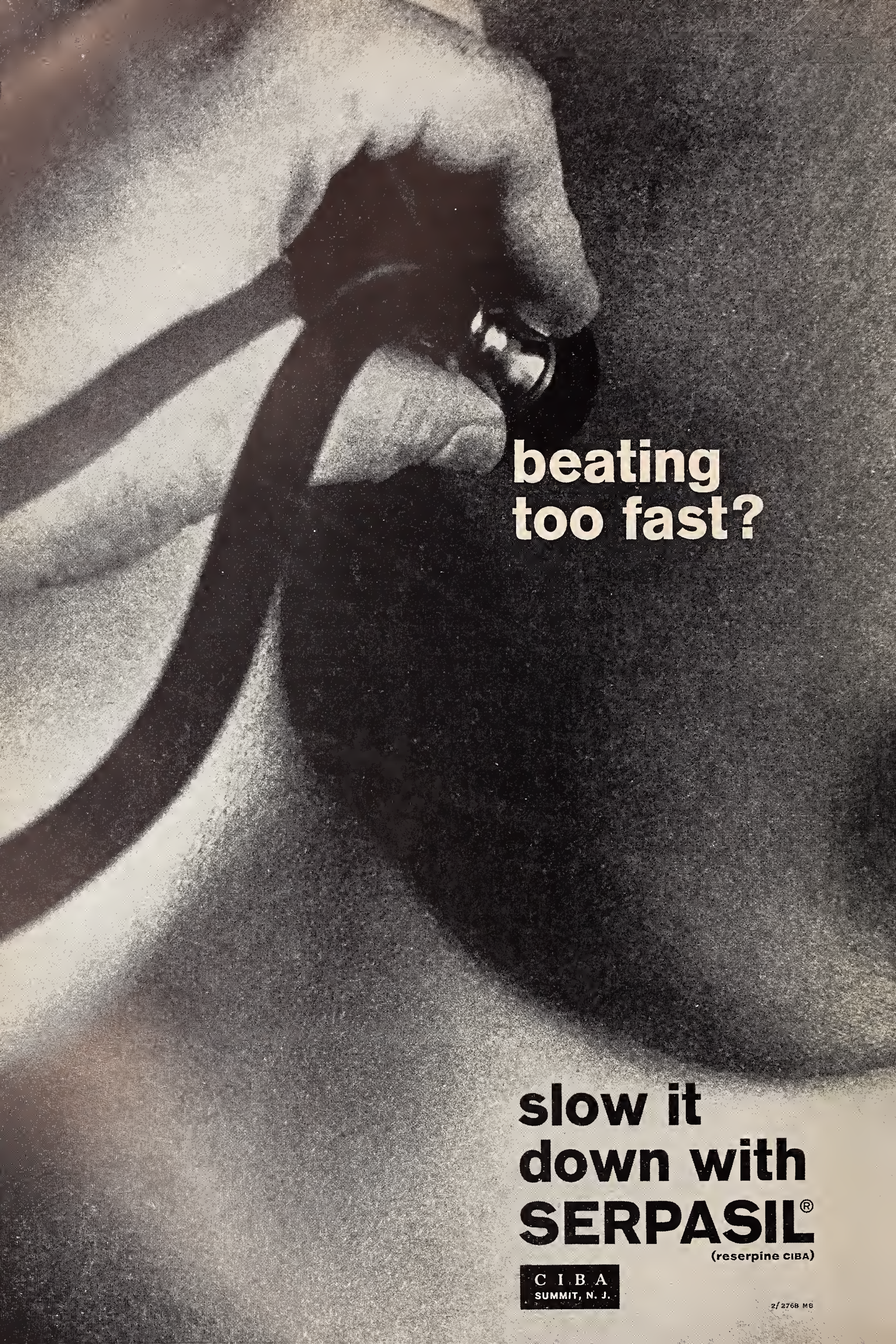
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Current Trends in Medical Education

Continued from October 1959*

The following panel discussion on Medical Education was presented before the guests and members of The Arizona Medical Association, Inc. on May 1, 1959, in the San Marcos Hotel, Chandler, Arizona.*

The guest panelists were as follows:

John Z. Bowers, M.D., Dean, University of Wisconsin Medical School.

John W. Cline, M.D., Moderator, Associate Clinical Professor of Surgery, Stanford University, School of Medicine.

Fred Dow Fagg, Jr., LL.D., Chairman, Western Interstate Commission for Higher Education.

Reuben G. Gustavson, Ph.D., President, Resources for the Future, Inc.

Walter L. Hard, Ph.D., Dean, State University of South Dakota, School of Medicine.

Harold Dalton Jenkins, M.D., Assistant Professor of Medicine, University of Colorado, School of Medicine.

Marvin E. Johnson, M.D., Assistant Clinical Professor of Surgery, University of Colorado, School of Medicine.

Vernon W. Lippard, M.D., Dean, School of Medicine, Yale University.

Thomas L. Royce, M.D., Clinical Assistant Professor of Ophthalmology, Baylor College of Medicine.

Thomas B. Turner, M.D., Dean, Johns Hopkins Medical School.

DOCTOR CLINE: We have a request for Doctor Turner to discuss more explicitly his institution's exploration and experimentation with a three-year medical college.

DOCTOR TURNER: We do not really have a three-year medical college. It is four years to the M.D. degree, but the curriculum has been rearranged so that some of the things that were formerly taken in the post-doctoral years may now be taken before graduation. We will have our first accelerating students next year. They will proceed more rapidly through the required portion of the curriculum, and in effect, save up elective time to the end of the schedule, so that instead of the prescribed elective time being taken during several years it will be taken in one piece at the end. During this period the student may take an internship, or a fellowship, or he may do research. We feel that this can be done without damage to the quality of their medical education. We regard it as in the direction of shortening the unduly long process from the beginning of college to the end of the medical residency.

DOCTOR CLINE: Thank you very much, Doctor Turner. There has been frequent mention of the value of a well established university as the basis for a medical school, "can you give a more precise definition of a well established university with high educational standards?" I will pass this question first to Doctor Lippard and then to Doctor Bowers.

DOCTOR LIPPARD: As you well know, among the universities in the country, no two are equally well established and most are still very young. If this quotation is from something I've said, what I had in mind was the type of university in which high standards prevail, in which the graduate school is developed to the point where there is a well established Ph.D. program, where there is an atmosphere of scholarly interest and active participation in research, and where there are other graduate and professional schools. A good medical school is not a trade school, or vocational school attached to a hospital, but a graduate school in the atmosphere of a university. A good medical school improves that atmosphere and is improved by it. That's about as far as I can go.

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*This is the final article on the recent symposium on medical education. Within the next month all of the material will be printed into a pamphlet and submitted to the members of the Association along with other interested parties.

I think you know what I am talking about.

DOCTOR BOWERS: Doctor Cline, I would interpret this in about the same way as Doctor Lippard has. I would say that a well established university is a university that commands respect at both the local and the national level for its educational research and service accomplishments. I would emphasize respect at the national level, because the recruitment of faculty in medical school is not easy. Some of the best possible men are sincerely interested in coming to medical schools that are affiliated with universities which have distinction.

The other point that I wuold make is perhaps a bit of elaboration on a point that Doctor Lippard made. I would be particularly interested in a university that had a well established graduate school, because in a well established graduate school are scientific and technical resources that can be of inestimable value to a medical school. So I would say national respect and a well established graduate school would be two facets that I would be eager to have available.

DOCTOR CLINE: Would other members of the panel care to comment? With reference to all these questions, I hope that you will all feel perfectly free to pick up the microphone and say what you wish.

Another question is, with an explanatory note, one of the objectives of establishing a medical school is to raise medical standards. Wouldn't a flooding of the State with graduates of a poor school lower these standards? Who wishes to take than one on? If nobody else wants to do it, I'll answer it.

I don't believe you could have a poor medical school. If you were to establish one, the Council on Medical Education and the Executive Council of the College Association would simply not permit that sort of a medical school to be accredited. If it started out in that fashion, it would have to improve before it could obtain accreditation. Does any member of the panel wish to disagree? If you had an adequate amount of money, (1) what time would you estimate would be required to assemble and start a medical school? (2) When would you estimate you could recommend to your son as a student to attend this school? May I give this one to Doctor Turner?

DOCTOR TURNER: With regard to time, I think Doctor Lippard has already answered this; I believe he set a minimum of four years from the time land was acquired. The real key to all of this, however, is the assembling of a faculty. I think you can write certain rules and objectives but in the final analysis the quality of the faculty will depend first, on whether your university objectives are high enough to attract good men to this environment. It will not rest on salary, primarily. A difference in salary of two or three thousand dollars is not going to determine whether a man comes to your university or not.

Secondly, the success of your school will depend on someone with a gift for spotting able young men. All of the good medical schools have had such persons. In the early days of Johns Hopkins, Doctor William H. Welch was extraordinarily successful in picking an outstanding faculty. Many other examples could be cited.

The second question was, would I or would you send your son to such a new medical school? The answer to this question depends upon how you handle the problem I have just discussed. The fact is that some of our most exciting and finest medical education has come out of new schools. So I think the quality will be evident from the very beginning and if the quality is there it will appeal to the first-rate students, and if it is not, it will not appeal. It's just as simple as that.

DOCTOR CLINE: Are there other members of the panel who wish to comment?

DOCTOR BOWERS: I think that there are many excellent men in medical education today who would be intrigued by the opportunity to join the faculty of a new medical school as Doctor Turner has indicated. It is important to realize that Arizona should have just as good a medical school not only in education, but also in research, as any medical school in the country. I would say that categorically, because the time has passed when medical research was concentrated in a few large institutions now by the access to research opportunity, primarily through the funds from the United States Public Health Service, any medical school really can be productive and creative in medical research. Say what you will about medical research, it is the thing that attracts faculty and attracts support today, you simply can't avoid it.

DOCTOR CLINE: Doctor Lippard.

DOCTOR LIPPARD: In reference to the atmosphere of a new medical school, I think one of the most exciting experiences I've had in recent years has been to visit some of these new medical schools in which they have assembled a group of comparatively young, not too young, men with experience, who recognize the challenge of putting together a curriculum and building something that they would be proud of. The atmosphere at some of those schools is really very much better than in many of the old ones, where they are gradually trying to overcome deficiences which are deeply established. I think it's entirely conceivable that a State such as Arizona, if it went about it in the right way, could have a first-rate medical school in a comparatively short time.

DOCTOR CLINE: Doctor Lippard, may I ask you a question, or rather ask you to comment upon the planning of two recent medical schools; namely, the University of Florida and the University of Kentucky as examples of the proper and gradual process of planning the establishment of a medical school.

DOCTOR LIPPARD: Let me start with Florida. If this gets to be somewhat autobiographical, you'll have to excuse that. My first contact must have been in about 1949. The Governor and the State Legislature asked me to come down there and spend some time talking to people and to write a report for the Legislature, which was to meet about six weeks later, on whether they needed a medical school, if so how they should go about it, and where it should be located. It didn't take long to find that the question they really wanted answered was the last one, because the competition was not between two cities but between five or six. Not knowing quite where to start, I wrote letters to the Secretaries of the County Medical Societies in which each of these several communities was located, thinking that you can't just arrive on the main street and start looking. I found as I arrived at each of the several cities that I was greeted at the airport, not by the Secretary of the County Medical Society in most instances, but by the Secretary of the Chamber of Commerce. It was quite obvious that this was a battle in which the medical profession played a minor role. My report recommended that the school be established in association with the University of Florida at Gainesville. That recommendation was accepted by the Legislature a few weeks later and it appropriated the funds for initial planning.

The next step was solicitation of funds from the Commonwealth Fund for an extensive survey to find out what kind of a school they should have and its relation to the rest of the University and the State. Now I think in terms of good planning it would have been better if that extensive survey had come first, before the decision regarding the location and so on had been made. This resulted in a long and excellent report which Doctor Poor wrote and which in many ways determined the character of the school to be established. I'm a little hazy about the dates, but somewhere within the next two or three years they had completed the architectural plans and began construction of the basic science building. They planned the whole thing as a unit and then got money from the Legislature in two pieces to build first the basic science building and then the connected University Hospital. It took about two years for construction of this first unit. They appointed a dean before the building was started, and he soon had with him a hospital administrator and one or two other people. By the time construction of the basic science building was completed, he had chosen the chairmen of all his preclinical departments and at least the complete faculties of those departments which were concerned with instruction in the first year. They were on the ground several months before the school opened. By the time the second year approached, they had the faculty of the second year completed and had appointed one or two of the chairmen of the clinical departments. By the time the third year was under way, they had opened their hospital. They have not yet graduated their first class but will have done so about ten years from the time the initial decision to establish the medical school was made.

In the establishment of a medical school in Kentucky, in which I also had a hand, the Legislature had already decided to establish a school on the campus of the State University. The President and Board of Trustees were instructed to go ahead with it but didn't quite know where to start. A couple of us went down and spent a weekend and talked with the Trustees, the Governor, the President of the university and members of the faculty. We told them the first thing to do was to appoint a good dean, turn it over to him and not rely upon a lot of visiting firemen. They appointed a good dean and the school has made excellent progress. I'm hazy about dates, but I guess they broke ground about two or three years from the time that they made the original decisioin to establish the school. The basic science building is now well under way. Some of the chairmen of the basic science departments have been appointed and will be in residence while the building is under construction. They will admit their first class of students in the fall of 1960. The hospital, I believe, is now under construction and they will probably have it finished by the time their first class finishes its first year, which I think is a better schedule than the one they followed in Florida. The hospital will be in operation for a year or so before they have clinical students. No matter how you go about it, it takes a minimum of eight years from the firm decision to establish a school to graduation of the first class. One should not plan on much less than four years from the time the decision is made until the first class is admitted.

Some schools have gotten off to a poor start because they didn't take time for proper planning and construction. As a result, my guess is that at the end of ten years they'll be less well off than the schools which went about their organization more deliberately. For one thing, the recruitment of faculty is influenced. The atmosphere that they established at the University of Florida was such that a lot of good people were interested in being a part of it. They had little difficulty in recruiting a first-rate faculty. They are having the same experience at the University of Kentucky. I don't think a school started off on six months notice can be equally successful in that regard.

DOCTOR CLINE: I do not mean to ask you to make a comparison, Doctor Lippard, but you did, I believe, in the course of your remarks draw a comparison between the University of Florida and the University of Kentucky. The University of Florida made its plans, then obtained a sum of money to conduct a survey from the Commonwealth Foundation which would bring in other people and you considered this was a wiesr procedure than that followed in Kentucky.

DOCTOR LIPPARD: The situation in the two states was quite different. In Kentucky previous consideration over a period of years had led to the conclusion that a school was necessary and that it should be located at the State University. In Florida, there was uncertainty as to the need for a school and competition for its location. Consequently, they had to proceed more slowly. In any event, a careful study should be made, either by a commission prior to the initial decision or by the dean and his associates before construction and curriculum planning are started. I think the best solution for Arizona would be to have a careful study done before the State Legislature makes up its mind as to whether it should establish a school and where.

DOCTOR CLINE: Are there other members of the panel who would like to comment? If not, then I will pass this question to Doctor Hard. "How difficult is it for good students to get into medical school at this time? Is there a backlog of such students?"

DOCTOR HARD: I think that some of the other members on the panel who will necessarily be receiving applications from perhaps a different group of students than we are apt to receive from, should also properly answer this question. I did make reference this morning, however, to the suggestion that it would appear that any qualified student could find access to a medical school today. I believe this to be true. The figures just received in my office from the Association, just prior to this meeting, suggested some 600 less medical applicants for the present '58 class than for the preceding class, would bring the total number of applicants down to something approaching a two to one ratio of applicants to places available. This suggests to me that the qualified candidate can get in. Our Association also keeps the medical schools informed from month to month of the candidates who have been accepted in medical schools throughout the country. We keep a running check in our office on all of our applicants to identify those who have gained admission to some other medical school, and in turn we have reviewed their applications again to see what we may have missed or what sort of a student this was who may have been admitted to another school. I haven't the figures for this present year since it's not quite complete. My figures for last year would be relative, but at least one out of three, one out of two and a half of all of our applicants would come up in some medical school. I would have to say that with the balance that didn't, probably medicine is just as well off if our evaluation techniques are worth anything at all. Perhaps some of the others would like to comment.

DOCTOR CLINE: Would any of the Deans care to comment?

DOCTOR LIPPARD: I think we ought to keep in mind the fact that we're talking about planning for the future. At the moment in 1959, we're admitting to medical schools students who were born in about 1937. Remember that was the height of the depression and the low point in the birth rate. Within five or six years, we're going to be dealing with people who were born after 1940, at which time the birth rate took a sudden spurt. The estimates are that the number of students graduating from college will increase enormously in these next few years. As I recall, there are expected to be by 1975 some three million more students graduating from college than there are at present. It's hard for me to conceive that out of three million more students graduating from college, we can't pick up 3000 more students for medical schools.

DOCTOR HARD: Might I add one more observation, since I have a suspicion that question may have been focused on whether or not all qualified students from Arizona for example, can be accommodated. Doctor Bowers made a very revealing statement this morning, citing the increased number of applicants from Utah when they expanded from a two to four-year school. I'd just like to emphasize that on the basis of your college enrollment in Arizona, and on the basis of our experience in South Dakota with the two-year school, it would be my prediction, that the existence of a medical school now, whether two or four-years is inconsequential, would jump the number of interested students in Arizona, a very sizable amount. This is the number that one ought to conjecture whether they could be accommodated in a medical school or not.

DOCTOR CLINE: Would anyone else on the panel wish to comment?

DOCTOR TURNER: I will merely emphasize Doctor Lippard's point that the tremendous pressure will come eight to ten years from now, both population wise and from the standpoint of the number of students seeking admission. There will be a great many more potential medical students in the country in ten years.

DOCTOR BOWERS: I think that this has an impact on the Arizona problem, which is implied but should be re-stated. That is, that at this time Arizona is dependent upon other schools across the country accepting your applicants. If the tidal wave of medical students that anyone confidently anticipates occurs, well-qualified Arizona students are going to have increasing difficulty getting into medical school. It seems to me that this is something that in your long-range planning you must have very clearly in mind. What can we do to assure that in ten years from now the well-qualified young men and young women of Arizona will have a splendid opportunity for medical education?

DOCTOR CLINE: If there's no further comment from the panel, Doctor Hard, approximately how many third and fourth-year vacancies do exist for medical students? Are they in good, recognized medical schools?

DOCTOR HARD: It might be well if I emphasize just a little bit on some of the remarks I made this morning to fill in some of the gaps that may have been left. The South Dakota school has never had the problem of transferring any student. There was one student back about 12 years ago that didn't get transferred. I still wish some medical school would take that boy. He is now an extremely successful Doctor of Osteopathy. Because then I could categorically say, "Never in the history of the school have we failed to transfer a student!" This particular student was assigned to the school, and it was before my time, by a naval program. He had flunked out of a previous medical school and that explains the whole situation. Again then there is no problem; there has not been a problem. As Doctor Cline pointed out, and I think the other Deans would immediately agree, it's impossible for me to rank any of these schools and I doubt very seriously if any member of the panel can rank them. We know that Yale is good. We know that Johns Hopkins is good. We know that Wisconsin's good. And South Dakota has got a two-year program that will equal any of theirs, so we're all in agreement. The point is, our students will transfer almost indiscriminately to almost any school in the country and have in the past and I hope will continue. The process of transferring is almost as automatic as our simply contacting a dean, "We have a student interested in your school. This is the record he has compiled, this is his background, are you interested in taking him?"

I did emphasize a couple of problems that do exist which make me temper my evaluation of the number of vacancies that exist. Every school wants the best material, but there is a bottom half and a top half of the class. We have had extremely successful relations with numbers of schools, getting the school to pair our students off. Take two from the top, two from the bottom half. Everybody is happy. Again, I emphasize and it is a problem that only needs some work done at the medical educational level with reference to National Boards. Since there are some 29 schools requiring them, our students cannot wait, they would be nervous wrecks waiting until July to find out whether they passed the National Board and, therefore, few students apply for transfer to one of these schools. But these again are problems which have a resolution and will be resolved and certainly there's every reason to believe that students make the reputation for your school. This is the reason we have no problem.

DOCTOR LIPPARD: Doctor Hard's mention of the lower half of the class reminds me of the story I heard the other day. A student came to the Dean of Yale College to ask some special privileges. The Dean said, "Well, now where do you stand? Do you stand in the upper half of your class?" He said, "No sir, I'm one of those who makes it possible for others to be in the upper half!"

DOCTOR BOWERS: I think one part of the question to Doctor Hard was about the number of openings for transferring medical students in the country. The Liaison Committee between the AMA and the AAMC questioned medical school administrations, I think, approximately one year ago. At that time it was estimated, and this was a very gross estimate, that there were between three and four hundred openings in junior medical school classes around the country for transferring students. As you know, today the major mortality academically occurs during the first and second years.

DOCTOR CLINE: This question is addressed to any and all of the panel. "Are the college premedical schools harder today than 20 years ago?" And the second half of the question is: "Is medical school harder today than 20 years ago?" Who would like to undertake that one? I can say, I am glad I am not a medical student today.

DOCTOR TURNER: I cannot speak about pre-medicine in any informed way. Medical school is more difficult simply because the whole standard of preparation has been upgraded. As Doctor Cline suggests, if I were in school now it would be extremely difficult for me, but if my son were in medical school it would be no more difficult for him today than it was when I was in medical school. Moreover, I would go further and say that I think the screening processes are so good that at most schools students rarely fail or drop out for academic reasons. We pride ourselves on the fact that no student has ever had to drop out of Johns Hopkins for financial reason. Usually failure is due to emotional difficulties or lack of motivation for medicine.

DOCTOR GUSTAVSON: The sciences, and physics and chemistry in particular, have gone from a descriptive type of course to one which is based on mathematics. The concepts of physical chemistry are used in all courses in chemistry. The kind of qualitative analysis that the student took 20 years ago today would be called nothing but cookbook chemistry and today is not acceptable. So I think that whether it's harder or not as hard is purely a question as to whether the student is prepared and capable of doing work that is not heavily weighted on the descripitve side.

DOCTOR CLINE: Thank you very much, Dr. Gustavon.

DOCTOR TURNER: Mr. Chairman, may I make one more comment? As many of you know, we are beginning to select and take in a few students after two years of college. This has made us, for the first time, look at the high school education of our applicants and we find some very interesting things. Some boys who have a fairly good record in college have had an extremely mediocre and even poor high school experience. The better ones have had a very good high school education. I believe that the medical schools and perhaps all professional schools will begin to put more pressure on the high schools to give a good, rigorous education in mathematics and in English and in at least one foreign language.

DOCTOR CLINE: Doctor Fagg, here's a question I think which is very pertinent. "Are the facilities for medical education in WICHE adequate for the future? For how long?"

DOCTOR FAGG: Fundamentally, the WICHE program is based on the idea of our taking students wherever there is space available and when somebody mentioned a one out of two application ratio it amazed me, because at the University of Southern California and at Northwestern, with which I am more familiar, the ratio is one out of fifteen students applying, not one out of two. At the University of Southern California we have a normal class of 68 medical students. May I say that practically none of them fails because of the care with which they are selected. We normally have about 900 students apply for those 68 posts for any individual year. If we take the growth in population that is expected in the west it might be interesting for you to know what is anticipated. In 1950, in our western group of states, there were 19½ million. In 1958, there were 25 million. In 1970, we anticipate 35 million. In 1980, 40 million people. Without any question, WICHE will continue the student exchange program for several years. There is certain to come a time when the pressure of population growth will force each state to reconsider its own problem. Just when that will happen is subject to your guess as well as mine. However don't think for a minute that it's easy to get into all the medical schools. The only place that I know of where there is really any set of vacancies is in some of the medical schools in the third and fourth year classes. In the entering classes, it's going to get tighter and tighter.

DOCTOR CLINE: I think there are some places in which the admission to the first year classes is on an unsatisfactory basis due to the decision of the State Legislatures to require that only bonafide residents of those states be admitted or where they require that a preference be given to such residents. There are some states in which there are not enough well-qualified applicants, and yet those medical schools are not permitted to take any large numbers of out-of-state students in the first year because of these restrictions. There are certain vacancies which are not available to these students and yet they count in the total number of vacancies.

DOCTOR HARD: Doctor Cline, we should make it very clear what and who we are talking about here. My reference was to the actual number of applicants, not to the number of applications submitted. It's true that Northwestern will have 1,400 or 1,500 applications, or at least I have heard that figure. We alone processed more than 300 this year. However, the average applicant applying to South Dakota is submitting eight other applications to other schools. The total number of applicants will be about 15,000. The total number of applications will be 70,000.

DOCTOR CLINE: There are some questions here concerning a two-year school. These questions are directed to Doctor Bowers. "If a two-year school would be planned, should a four-year school be planned at some future date or should such plans be made after the experiences of a two-year school?" The second question which you could answer at the same time, "Do you feel a medical center should be established in a two-year school as well as in a four-year school?" The third question: "Is there anything wrong with establishing a two-year school if things are inadequate at present for the more expensive four-year school especially in the face of the explosive increasing population and the basic need for more medical schools? Is it easier to change from a two-year to a four-year school than it is to start a four-year school from scratch?"

DOCTOR BOWERS: I will be the devil's advocate or whatever you wish to call it and this is no reflection upon the excellence of the two-year medical program at South Dakota, by saying that I think whenever possible one should start a full four-year program at the beginning within the framework of a medical center. I think that the additional cost will be more than justified in the long run. I would say that in time of great financial crisis and emergency that a two-year program might be justified. But at the beginning there should be plans made and laid for moving as promptly as possible to a full four-year program. As far as problems in transition are concerned I think that at times one may want to make some changes in faculty, and changing a medical school faculty can be a rather difficult problem. In a movement from a two-year to a four-year program, one may want some different kinds of people in the basic science department than is true when one is running the two-year program. I think there are many other problems, but these are just a few. I would say categorically again, I think Arizona ought to think very seriously about the full four-year program in a medical center.

DOCTOR CLINE: I think specifically the

question, however, was if a State does not feel, and it's not pointed at Arizona necessarily but we presume that is what it means, it is financially able to undertake a four-year school as of the present time, are there objections to their starting a two-year school and what planning should be done beyond that point?

DOCTOR BOWERS: I said that I think that in times of financial crisis or impossibility, that a two-year program would be completely justified, but that the location of the two-year program should be such that at that site, one could move promptly to the full four-year program.

DOCTOR CLINE: Would any of the panel care to comment? Doctor Lippard.

DOCTOR LIPPARD: No, I have very little to add because I agree with what Doctor Bowers has said. I think it would be very short-sighted to establish a two-year program without having a very clear plan for its development into a four-year school, in terms of physical location, in terms of building, in terms of selection of faculty and everything else. Any state which can afford to establish a two-year program in 1963 will by 1970 or 1975 probably have the resources necessary to go the whole way.

DOCTOR HARD: I would just add a little personal experience to second the remarks that have been made. In my mind it's an open question whether South Dakota will ever be in a position to support a four-year school. One of the factors which strongly precipitated the defeat of the development of a four-year school some 12 years ago was the inability to work out a clinical arrangement with existing hospitals in the only center in South Dakota where we could conceivably locate, that is Sioux Falls, with a population of around 60,000 to 70,000 and a drawing area perhaps of 150,000. Now with the two-year school on the campus at the University of South Dakota, it would virtually require, it seems to me, the development of a complete medical center in a community of 5,000 people, which is hardly realistic to me at least. On the basis of this situation I certainly concur that the planning should include the area of clinical facilities.

DOCTOR CLINE: I refused to recognize one of the members of the audience a moment ago.

UNIDENTIFIED: "Is it harder for a woman to get into medical school than for a man?"

DOCTOR CLINE: I will ask the panelists if they will answer the question.

DOCTOR LIPPARD: Any of us could answer that pretty readily because the statistics are readily available. The ratio of women applying for admission to medical school to those accepted is just about the same year after year as the ratio of men applying for admission and their acceptance. The fact remains, however, that very few girls apply for admission to medical schools, so the number admitted is small.

DOCTOR CLINE: Are you all in agreement?

DOCTOR BOWERS: I think it is interesting that a study carried on several years ago, I believe it was by John Stahlnecker, showed that approximately 85 per cent of the women who graduate from medical school continue at some time in an active productive medical career. Usually this is undertaken after a little active productive homelife.

DOCTOR CLINE: There is a question here, asking "whether there is really a trend toward the four-year medical school in the light of the suggestions of the College Association and the Council, for the establishment of more two-year medical schools." The second part of it concerns "the advisability of the establishment of a two-year school in addition to the establishment of a four-year school."

DOCTOR BOWERS: I was on the Council of the Association of American Medical Colleges when the resolution was adopted in concert with the Council on Medical Education and Hospitals of the American Medical Association. It was our feeling, and I must say that there was some disagreement on this among members of our Council and also in the Council on Medical Education, that because of the anticipated demand for medical school opportunities that we should express ourselves on the various possibilities that existed for increasing the production of physicians in the country; that the two-year medical school program could play a part. Therefore, we drew a resolution which said that the two-year medical school programs could make a contribution to increasing the supply of physicians in the United States. It was not implied as a preferential statement; in fact the year before, we adopted a far stronger statement calling for the activation of new medical schools and the expansion of existing schools, all full four-year programs, as rapidly as possible.

DOCTOR CLINE: Doctor Lippard, would you care to comment?

DOCTOR LIPPARD: We should pass over the assumption that existing schools are going to be able to expand to meet this anticipated demand. Existing schools have done a great deal to increase enrollment over the past few years. There are a very few that haven't about reached the saturation point. The last time a survey was made, the answer was that over the next 15 years existing schools could increase their enrollment somewhere in the range of 8 to 10 per cent. That's about as far as they can go and they are not going to be able to meet the demand for physicians. New schools are necessary.

DOCTOR CLINE: Would you agree that the bottleneck in increasing the enrollment of medical schools is mostly in the pre-clinical years rather than the clinical years?

DOCTOR BOWERS: Yes, I would.

DOCTOR CLINE: Therefore, a two-year school established now on the pattern of the University of South Dakota could provide a backlog of students to enter the more elastic, clinical years, subsequently. Would you agree with that?

DOCTOR BOWERS: I would agree with it. I would like to make one comment. I have a great regard for South Dakota, but if I were going to start a two-year program, I would take a look and see if there were not some new innovations, some new developments needed in the two-year programs. I know that in the four-year program we are far from having all of the answers concerning how to prepare men for the practice of medicine. I dare say that this is true of the two-year programs as well. I think that some logical experimentation in the two-year program is one thing that might make a two-year program an interesting development at Arizona, and I personally have been much interested in the changing program that has been developing at Dartmouth in their two-year school.

DOCTOR CLINE: This morning, Doctor Lippard, you commented on the cost of establishment and operation of a two-year program as against the four-year program. There are questions asking for you to repeat your previous statements concerning these.

DOCTOR LIPPARD: Sorry I didn't bring my notes with me but as I recall, it adds up to something like this: In terms of construction, assuming that you plan a four-year school and build only that part of it which is essential to a get the two-year program under way, the capital investment would not be less than $6,000,000. In terms of operating expenses, the minimal, adequate budget for a two-year school would not be less than about $500,000, as compared with somewhere close to $1,500,000 for a four-year school. Some of my colleagues may debate these figures.

DOCTOR CLINE: Doctor Hard, what are the figures for a two-year school today?

DOCTOR HARD: This morning, well I simply gave what our budget would be for this coming year, the facts are we are operating on it or will operate on it. This isn't to say that I wouldn't like to have more, but it's all I received. There are two or three positions in our institution which I think we should have which we don't have which could add $40,000 or $50,000 a year to our salary budget. I don't think Doctor Lippard's statement is anywhere as near out of line. The fact that we're operating on something less doesn't necessarily mean that it is still adequate. In this very context, I want to come back to a statement by Doctor Bowers. I would consider it most unfortunate in this regard "financial-wise" as well as "educational-wise" if any state should necessarily model its program, shall we say, either on a two-year program as for example ours or any of the other schools, and one might go a little bit further and say the same for a four-year school. I think one very essential point we keep missing is that we are talking about a future; and to model any program on the present structure when we have available for us for analysis so much of what the future portends, would be a mistake. Doctor Turner's experiment here is trying to solve one facet at least of this riddle, of a long program in a new environment where you don't have to be bogged down with all the ritual that we have to carry along with us, personality wise and otherwise. I couldn't too strongly emphasize Doctor Bowers' comment that before anything is done, the objectives should be established, and there is plenty of evidence available today that some real experimentation in education is necessary.

DOCTOR CLINE: There is a question not directed to anyone in particular, but it asks if the $20,000,000 figure for the development of a four-year school, is not high.

DOCTOR LIPPARD: I think, Doctor Cline, I mentioned this figure of $20,000,000 and as I said this morning that's approximately correct, based on the experience in development of two new four-year schools within the past two or three years at the Universities of Florida and Kentucky. They are in the process of expanding the medical school at the University of West Virginia from two to four years and building an entirely new plant, which is going to run much higher than that. The figure of around $20,000,000 is not exaggerated.

DOCTOR CLINE: Doctor Bowers, you mentioned something that you characterized as rather exciting in the plans at Dartmouth in its two-year school. It's requested that you comment thereon.

DOCTOR BOWERS: Well, Dartmouth has endeavored to carry on a significant degree of integration in its various programs, and perhaps Doctor Turner could comment at greater length on this, has also endeavored to reach back into the preparatory phase, that is to say the undergraduate, the liberal arts area, and to tie this in with the program in the medical school.

DOCTOR TURNER: I do not have the details of this before me at the moment. But I would like to emphasize the same point that Doctor Bowers made, that there is great opportunity for experimentation in this area. The curriculum need not be frozen in the pattern of the past. We want to hold fast to that which is good, but we should be aware that there are many opportunities for improvement, particularly in the light of better high school education coming into the picture. This long educational preparation for medical practice is frightening away able students. We can begin to reverse this trend without seriously affecting the quality of medical education.

DOCTOR CLINE: There is an additional question here. "Is a four-year degree in the humanities or liberal arts ideal for medical preparation rather than the usual pre-medical scientific background of the under-graduate." I can't read it exactly, but I think it expresses a desire to contrast a degree in the humanities or liberal arts as against a more heavily loaded scientific pre-medical program.

DOCTOR LIPPARD: I think any of us could take a crack at this one. My own feeling is that there is no place in the college curriculum for a fixed pre-medical course. The student should be encouraged to major in that field of knowledge about which he is excited. Concurrently, he must complete the courses which are essential as tools for the study of medicine, namely, general and organic chemistry, physics, and biology. Now this does not mean that a student planning to study medicine should not major in biology, for example, but it does mean he should get beyond the elementary level in some field of knowledge and not spend four years in college dabbling at elementary courses in many different fields. It is certainly reasonable to expect that many students planning to enter medicine will be the kind of fellows who have a strong interest in biology or chemistry. I would be the last one to discourage such a student from majoring in those fields. I would prefer to see him getting into courses at an advanced level in some field of knowledge, including one of the sciences, rather than take the kind of pre-medical course in which he dabbles with this and that and sometimes attempts to anticipate, at the college level, courses which can be taught more effectively in medical school. I cite, for example, the superficial courses in anatomy and physiology that are often offered in liberal arts colleges.

DOCTOR BOWERS: Well I couldn't agree with Doctor Lippard more, but I think it is an over simplification to compare a humanities major with a pre-medical major. I don't think either one perhaps could adequately prepare the student for medicine. The student will be inordinately handicapped if he doesn't come to us with a good background in chemistry and mathematics. But so much of the biology, as Doctor Gustavson pointed out, descriptive biology, doesn't matter in molecular biology. The student better be taking physics or history or chemistry than some of the things that go under the name of biology. I might say that although Medical Schools Admission Committees and Deans talk a great deal about the desirability of the applicant diversifying his preparation, the vast majority of young men and young women coming to medical school feel that the surest way to get into medical school is to have a very deep preparation in physics, chemistry, biology and mathematics. So that no matter how much we talk about the fact that we like them to diversify, they still really don't believe it. They think that when we get our applications down and select our classes, the sociology, anthropology, economics, all go out the window and all we look at are physics, chemistry, and biology.

DOCTOR CLINE: There is a question here. "What is the value of a two-year school if there is no certainty that the student can transfer to a medical school?" I think that question has been reasonably well answered. Insofar as I know with rare exception that probably is justified scholastically, there has been no particular difficulty in the students of the three still existing two-year schools, namely, North and South Dakota and Dartmouth, gaining admission to advanced status in other medical schools. Do members of the panel disagree with that?

There is a question here that requests the discussion of a statement attributed to Stanley Olson, Dean of Baylor Medical College, who recently outlined what's called a "3-3 plan." Three-year discipline in medical, 11 months per year; 3 years in hospital training in medicine, for both general practice and the specialties. Will the panel please discuss.

DOCTOR BOWERS: I have never heard of it. Maybe Doctor Royce has, he's from Baylor.

DOCTOR ROYCE: I've never heard of it either.

DOCTOR CLINE: A question to Doctor Hard. "Do your students ever take National Board exams?"

DOCTOR HARD: There have been some years when we actually required our students to take National Board. This is no longer in effect. About one-third of our sophomores will voluntarily take Part I of the National Board. This year we are making available four of the six National Board examinations to our freshman class. This is a voluntary thing for which the school is putting up the money, and these students are not candidates for the National Board. They will be taking the same examination as the candidates however.

DOCTOR CLINE: Here is another question commenting that from the inflationary spiral in which we are involved, the time required for the planning and development of a medical school, "Would not the cost be higher in the event of delay?"

DOCTOR LIPPARD: That's not a question for a medical school dean, but an economist. The figures that I have heard about building costs indicate that in our part of the country, they're going up about five per cent a year. If that's true elsewhere, obviously it's going to cost more to build a school ten years from now than it is now.

DOCTOR BOWERS: I might simply add this, that I know that Wisconsin, Michigan, Minnesota and Illinois are all very seriously evaluating their tax structure and total economy in anticipation of the continuation of the inflationary spiral and with deep concern about maintaining excellent instutions for medical education. Therefore, I do not believe that an inflationary spiral is necessarily a point against a medical school, but I'm certain that if Arizona intends to do a job on establishing a four-year medical school, some changes in your tax structure and economy may very well be justified.

DOCTOR CLINE: There is a question here which is often raised. It asks if any of the panelists have had experience with the disparity in salaries of medical school faculty compared to the salaries of the faculty in other schools in the same university. Doctor Turner.

DOCTOR TURNER: There are disparities. Some of these disparities I think are justifiable ones; others are not. But I would point out that inevitably when any one segment of a university has higher salaries for whatever reason, it inevitably helps all other salaries. So that I think this is not something to be afraid of because this has happened at Johns Hopkins. We have had to raise medical school salaries to meet competition, and a natural result has been an increase in other faculty salaries. Now I don't know whether this is good for the university but it's certainly good for the faculty. And I am rather a fatalist in this area anyway; I think it's merely a question of how rapidly these adjustments come about. They have to come about inevitably, and so at one moment one university has a slight advantage, but in the long run, I don't think this determines one man's decision to stay at a university or to come to one. He is more far sighted than that, because all good universities have to keep up with the procession.

DOCTOR CLINE: Any further comments by members of the panel? I think this applies more particularly in the clinical field. The earning capacity of most of the pre-clinical faculty, except for perhaps the people of the department of pathology, probably is not so much different than it is in the liberal arts college. However, when one goes into the clinical field, the capacity of the gifted physician to earn much larger sums of money outside of the medical school is something that the medical school has to take into consideration. It, therefore, has to see that he's either well paid or that he is permitted to augment his income to a comparable point. Otherwise, they simply can't retain the type of people that they would like to see in a medical school.

DOCTOR GUSTAFSON: I suppose I've had as much to do with this particular problem as anybody here. I think that basically you are just dealing with the economics of the market place. If any of you have ever tried to hire a nuclear physicist in these days and compete with General Electric or Westinghouse, you find that your salaries in physics are considerably higher than they are elsewhere. A very interesting thing that I ran across a few years ago was this. The Ford Foundation asked me to look into the problems as to whether the Ford Foundation should set up a unit dealing with science and engineering. In going over the country and talking to people about the opportunities and so forth, I found to my great surprise, that the real drought today for positions that exist are in Greek and Latin. These people are not being produced. I could name at least three outstanding institutions that would pay almost anything for a good Latin and Greek scholar. I think that what we are dealing with is economics in the market place, and there's no way to beat it.

DOCTOR CLINE: I would like to ask the members of the panel if they don't feel that the same economic influences are partially responsible for the falling off in the number of applicants for places in medical school. A boy at the end of a four-year engineering education or a somewhat longer education in chemistry or physics can go out into industry and can command a very substantial salary at the time. Is this not to some degree a cause for the originally oriented pre-medical student to deviate from his planned course and go into some other field of activity?

DOCTOR LIPPARD: I think that is a factor. But there's another factor that we don't take into consideration often enough. That is that if a man wants to go into graduate study in physics or chemistry today, he is almost guaranteed a fellowship paying from $1,800 to $3,000 per year. All too frequently students now going into graduate study leading to the Ph.D are shopping around from university to university to find the one that will put up the most money rather than to find the man with whom they can study most profitably. Now, contrast that with medicine. When a man enters medical school, the best he can hope for is a full scholarship enough to cover his tuition with no contribution toward his board and room and other expenses. Furthermore, he can look forward to a period of four years or more after he finishes medical school during which he will be earning little or nothing, and all this at a time when 50 per cent or better of our students are married by the time of graduation. There are many economic factors involved in the lack of attraction for the study of medicine and the problem is broader than the immediate availability of a salary.

DOCTOR BOWERS: I'd like to point out another aspect of the problem. And that is the Sputnik, Polaris and Explorer have made a much greater impact on the youth of our country than Salk vaccine, penicillin or cortisone. The high school age youngsters are at that level making their decision to go into physics, chemistry, outer space or celestial mechanics at a time in many instances where they had not yet come to grips with the economic problems; but that at an even lower level we are up against an exceedingly serious problem, because the best young boys and young girls at the high school level are at the point of making the decision not to go into medicine but to go into these other more glamorous fields. So I think that there's another factor in it.

DOCTOR GUSTAFSON: I know what has been said that is a general opinion, but it doesn't check with the Purdue study. The Purdue study of some 15,000 high school youngsters indicated that medicine and teaching were very high on the choice level of the high school students and amazingly enough atomic energy was pretty low.

DOCTOR CLINE: Are there other comments?

DOCTOR LIPPARD: I wish I could quote figures which I don't have at hand but heard a few days ago and which are rather disturbing. They indicate that the medical students of the country at the present time are being drawn from a comparatively small economic segment of our population. The income of the families of the large majority of students entering medical school today is $10,000 or more as contrasted to the national average family income of less than half that amount. I'm not sure that young men of all economic groups have an equal opportunity to enter the study of medicine today, although we all know of examples of young men who wanted to do it badly enough and found a way.

DOCTOR CLINE: There is a question here. "With the changes in modernization in the four-year schools, will it be more difficult for a student to transfer to a four-year school from a two-year school." It points up Stanford's new program as outlined by the Dean on a recent visit to Arizona that there would be no vacancies for students after two years, in their scheme.

DOCTOR HARD: Perhaps some of the other panelists have some comments to make on this, for they see this problem at the other end of the line. For my personal experience at South Dakota this will be only the second school that, owing to the type of program they have embarked upon, would prevent accepting one of our students. Western Reserve University, some four or five years ago inaugurated a, shall I say, rather sweeping experiment in medical education. Up to that time Western Reserve had consistently taken numbers of our students but had to advise us that, owing to the radical departure from the more stereotyped program we had, they did not feel they could continue to accept transfers. It is readily apparent that if every medical school goes in for a program of this type, we will have a problem to contend with, and it would undoubtedly mean changing our curriculum accordingly.

DOCTOR CLINE: Do those members of the panel who have intimate knowledge of the plans of the medical schools over the country feel that there may be a considerable number of the schools currently giving indication that they are considering the pattern outlined by the Western Reserve or Stanford Universities?

DOCTOR LIPPARD: I don't know that any of us could answer this directly. But it is true that after some five years of the Western Reserve experiment, no other school has decided to adopt it in its entirety. Perhaps in time some will.

DOCTOR TURNER: I feel that whatever disadvantage there is will be a temporary one. I think that as these patterns evolve the two-year schools will evolve, too, and I don't see any fundamental obstacle in this respect.

DOCTOR CLINE: "Does a medical school have much influence in raising the level of medical practice in the smaller towns of the state? If so, how?"

DOCTOR BOWERS: I think a medical school has a very definite impact on raising the level of practice in a state. There are several ways obviously by which this is done. One is that an active four-year program in a State will produce more physicians, and I have a feeling that if you have an adequate supply of physicians, they can practice more efficient and effective medicine than if you are in short supply and the doctor is called on to care for far more patients than he might be able to do and apply his best available skills and intellectual resources. There are other things a school can do directly for a community. One, of course, is to operate active programs in post-graduate medical education. There are a number of medical schools both private and tax supported, which are quite active in this field. I personally think that one has to keep this in balance, that you can get to a point where your faculty is so busy rushing around the State giving post-graduate courses that they forget to do teaching back in the home yard. But I do believe that a well-conceived, carefully developed plan of post-graduate medical education at the medical center and in strategically selected communities around the state can raise the level of medical practice. There's one other thing that is more personalized, and that is that I have a feeling that a preceptor program, which we operate at Wisconsin in which our students spend three months of their senior year working with a physician or a group of physicians around our state, has definitely contributed to raising the level of medical care in the communities in which these perceptor centers are established.

DOCTOR CLINE: Are there other comments? I think that Doctor Bowers' statement would be agreed to by the deans of all of the schools who have such preceptor programs. I know that it is true certainly in Kansas, and it is true in certain other states. They feel that it has had a great impact upon the level of medical care across the state.

Now we go into the matter of personal economics. Will you comment on what happens to the interns and practicing physicians in cities where a medical school is established? One, if the physicians teach; two, if the physicians do not teach. Would you take that, Doctor Johnson, for a start?

DOCTOR JOHNSON: I don't know the results of any surveys on this particular point. I think that there's no question about it, that if one makes an active contribution to the school, this represents certain hours that he will not be available for his own private gain. This is a sacrifice that he makes in return for what he feels he obtains from the school. I think that it's a myth that a doctor's participation at a medical school will increase his financial gain in the community. I do not think that one obtains an appreciable number of patients by virtue of going to the school and teaching. No one really knows that you do this. When I am on service at the Denver General Hospital, a county hospital, and they refer me a few private patients, the collection rate on that group is so low that often I don't even bother to get their addresses. This just comes under the philosophy of taking the bitter with the sweet, and it is something that you do and are glad to do if you are interested in the welfare of medical practice and patients.

The people who go to the private physician are for the most part not interested in going to an institution for their medical care. Under normal circumstances the two groups do not compete for given patients. This is just the nature of human behavior.

I think one of the difficult things from the economic standpoint is the animosity that results from undue publicity. Private practitioners do not feel any differently about the medical school here than we do about some of our colleagues, who manage to get into the newspaper and appear to be the only doctors in the world that know modern medicine. This is unethical, and it exerts an undue influence and was written off in our code of ethics a long time ago on the basis that the best advertiser isn't necessarily the best doctor. A great deal of animosity develops on this particular count.

From a practical standpoint one only has so many hours in the day that one can be gainfully employed. The professor at the school only has so many hours. The dilution factor is tremendous. At the medical school in a large city you may have ten or twenty doctors who are on the full time faculty of the school who wish to have and are actively engaged in some private practice. In the city and county of Denver, there are a thousand members in the County Society. If those ten or twenty men were busy all day, everyday, it really wouldn't amount to a great deal in affecting the overall income of the doctors in the area. I think the doctor who wishes to participate in the teaching program must realize that he will do so at a little bit of a sacrifice and he shouldn't be too sensitive.

On the other side of the coin, however, it's not uncommon for the man in the medical school to survey the local situation and pick out the oldest, best established and probably the best doctor in the area, find out what his gross income is and decide that is probably what his net should be as a professor. This is a very unrealistic viewpoint. Many of those men with a large gross income are truly outstanding men, or they have some highly talented assistants helping them bring in this gross income. The facts of life are that the overhead of the office will take from 30 to 50 per cent; and by the time he finishes dividing his money with everyone that has an interest in it, he will net considerably less. I really feel that basically there should not be much reason for animosity in the economics of the problem. I feel it is overemphasized by both sides.

DOCTOR LIPPARD: May I comment on a somewhat related question while this topic is on the table. We hear criticism from time to time that members of full-time faculties who are on salaries are taking the bread out of the mouths of their colleagues. When you really look at it, you find that what Doctor Johnson has just said is most certainly true, i.e., that this is quite impossible. At Yale, we are on a so-called full-time system. We pay our clinical faculty members salaries which are comparable with, but somewhat higher than, the salaries elsewhere in the university. Members of our faculty see a certain number of patients referred to them by practicing physicians but for both diagnosis and treatment. They determine the fee to be charged and turn a chit into a billing office, the bill is collected and the money in turn pays part of the faculty salaries in clinical departments. It can be most honestly said that every cent collected goes into the pocket of a licensed physician. In an average year, the total income from our entire full-time faculty is equivalent of that of about twenty reasonably successful practicing physicians. In the state of Connecticut there are about 3,000 registered physicians. It is not too difficult to see that the existence of Yale medical school and the fact that its full-time faculty does see some private patients has little influence on the incomes of physicians practicing independently in the state.

DOCTOR JOHNSON: An actual example illustrates best how unfavorable feelings develop. In Denver one of the full-time teachers was underpaid, and through the mutual efforts of volunteer and full-time faculty members his salary was raised to over $20,000 a year. This gave him a little working capital so he made more use of the volunteer help to take care of the work at the hospital, and he then opened two private offices. This type of thing can lead to much misunderstanding. It is really the human element that endangers the relationship between doctors nearly every time.

Doctor Gustavson hit the keynote when he said, "You don't have to make the same mistakes over and over and over again." I think the important point in the issue under discussion here is the recognition of the opportunity that is presented in the starting of a medical school. Remember that the longest journey begins with a single step. Tackle the problem of establishing a new and better relation between private medicial education than has previously existed to the benefit of patients and doctors alike.

DOCTOR ROYCE: My experience in an institution along these lines is with a research institution in which there is a pay scale which goes from zero, as far as the ability to pay is concerned, to that of the patient who can pay the full rate. In this institution actually 87 per cent of the patients who are admitted are charity patients, the other thirteen per cent are full or part pay.

Physicians in general are strongly behind providing the best in medical education, whether it be in the undergraduate or postgraduate level. Those clinical professors who must be full-time may be accorded some contact with private practice. Whether it be by referral or consultation basis should be worked out in detail with the County Medical Society. If a medical organization has any justification for its existence, it should be in its right to determine how a medical teaching institution can participate in private practice. If proper justifications are presented there would be no question in my mind as to what would be decided. If some such understanding cannot be worked out, the chances of continuous conflict between the private practitioners and the medical school are almost inevitable. If left entirely to the authorities of the medical school to decide such a policy, the original justification for private practice by full-time professors may be subject to abuse. Extensions of medical services can be a mechanism to assume more and more financial obligations of the institution involved. It is true that full-time medical school professors can only do so much practice when compared to the quality done by private practicing physicians. It is the *quality* not quantity of clinical practice that is affected — especially in the surgical fields. In an area such as Arizona, where growth in population has been exceedingly rapid and the roots of the medical profession may not be too deeply established, a medical school designed to participate in medical practice from its inception may very definitely cause an appreciable shift of practice away from private practitioners to full-time medical school professors — many of these patients will be from the upper economical brackets. To avoid this situation it might be well to evaluate very closely the local teaching talent. It should be adequate or almost adequate in the clinical fields. Use full-time professors primarily in the administrative field and where gaps might exist in certain areas among your local physicians. The bulk of the clinical teaching could be very well handled by local men. This would greatly diminish the financial obligation toward maintaining a medical school without compromising the quality of medical teaching. If the private practicing physicians accept those teaching responsibilities which they may be called upon to perform, there should be very little controversy associated with the establishment of a medical school. These are matters which the local physicians should weigh carefully before arriving at a decision.

DOCTOR TURNER: It is timely to bring these points out on the table as Doctor Royce did in his original talk. We have the same system at Johns Hopkins that Doctor Lippard described. Therefore, I would advise very careful-looking into these patterns before one is set. I agree with Doctor Royce when he recommends that this be done. Now let's get back to fundamentals a moment. Why are full-time clinical professors allowed to charge a professional fee? The reason is that the full-time man needs both types of clinical material, private and ward patients, in order to practice good medicine and to be good teachers. There will not be enough so-called "free patients" in the future to supply the need for the full-time faculty. However, when the income from the private practice of the full-time people goes into a pool, which helps to support this full-time faculty, this immediately imposes a limitation on their desires to earn a great deal of money for the medical school because it does not increase their annual take-home pay at all. This, in my opinion, is a healthy thing. This is a desirable pattern from another standpoint, for the medical school in effect says, "your main job is to teach and to do research, and we do not want you to spend a great deal of time in clinical practice." This pattern, however, is followed by only a few medical schools, for the prevailing system is one of so-called "geographical full-time." I take a dim view of this latter pattern, because I think it offers greater incentive for the so-called "full-time faculty" to spend an unwarranted time in medical practice. And so again, it does behoove those interested in the starting of a medical school to think these things through carefully before establishing a final pattern.

DOCTOR CLINE: Having lived all of my life in a community in which the geographic full-time has existed in two institutions, and having always been on the clinical or volunteer faculty, I have heard unjustified criticisms directed at certain of the geographic full-time men. Other criticisms were justified. There have been instances in which some of the members of the faculty of one or the other of these schools have imposed upon the situation to the development of very large incomes for themselves and to the detriment of the teaching program. In one of these institutions a resident recently told me that it was impossible for him to see the head of his department even though he had been on the staff for something over two years because the Professor was so engaged in private practice that his time was absorbed. I think one has to look at it this way: the geographic full-time man is not a full-time man. He is a part-time man who simply devotes a large part of his time to the teaching program. If the institution is capable to pay him an adequate salary, he should be permitted to augment his salary up to a certain point. There are various mechanisms which have been employed to limit the amount of private practice which such a man may do. There may be a financial limit or a limit on the number of beds that he may have. The important thing is, whether that man attends to his teaching duties with fidelity and devotes the requisite amount of time to the job for which he is employed. If he happens to earn a little money under proper circumstances, I don't feel that any of us should complain. If he does not fulfill his teaching responsibilities, this is a different matter. The example which Doctor Johnson gave is a beautiful one. That man ought not to be on the faculty of a medical school in any capacity because he is not a proper influence in the medical school.

DOCTOR JENKINS: In the course of learning and teaching in medical schools, I have been exposed to a variety of systems wherein private patients have been treated. As some of you may know, until a few years ago, a full-time man at the University of Colorado was not allowed to have much contact with private patients. I would urge you to avoid this system because it simply does not work well in obtaining the kind of teaching clinical faculty which you will desire. The best full-time clinical teachers are people who have some responsibility in the personal care of private patients. People who are going to teach an active house staff and medical students how to take care of private patients should take care of such patients themselves.

The whole plan of the private practice privileges of the full-time staff should be very carefully considered and spelled out in advance, however. At the University of Colorado we are making some progress toward a harmonious arrangement. I think it is most important that you limit the time which full-time teaching people can spend in private practice activity. The human being, being what he is, finds that as the income grows, the temptation to devote more time to private practice also grows. Doctor Cline has pointed out that over and over again it has been shown that, when the time is unlimited that the full-time teacher can spend in the care of private patients, he soon is likely to see very little of the medical students and very little sometimes of his own personal staff. Limitation of this time is very important.

It is my own personal feeling that full-time teachers in an institution should see only patients who are referred to them by practicing physicians. Furthermore, the practice should be limited by the time factor and the gross income factor as a double check to insure that his primary interest remains teaching. If he does a good job in the institution where he is teaching and if he is really worth his salt as a full-time clinical teacher, he will not lack for an adequate number of referred patients. Finally, I should urge you to look very, very strongly at the system advocated by Doctor Lippard and others whereby the geographic full-time is eliminated. I think this has been a hazard in most of the institutions where it's been accepted. Our plans, which are being faciliated at the University of Colorado right now, are strictly toward the type of system which was just described. That is, there will be no such thing as part-time, full-time people. All full-time people will be full-time people. Otherwise they will be in private practice. The income that they derive from any patient they see, irrespective of what hospital they see those patients in, whether it's the teaching hospital or whether they are performing a requested consultation in a private hospital, reverts to the institution, and these fees are aimed at faculty salaries. It is by this means you understand that the Professor of Anatomy has his salary raised as well as the Professor of Surgery. One of the best ways to have a happy institution is by having salaries throughout all levels of the faculty comparable. The way to have an unhappy institution is by having the clinical professor automatically earn seven to eight times the income of the pre-clinical professor. When you come right down to it, how well the system works in terms of full-time clinical teachers participating in practice, preferably a referred practice, really depends upon the veracity and the honorable character of the people involved; and those who are really participating in full-time teaching because what they want to do is teach and do research, will not really abuse this privilege.

DOCTOR BOWERS: May I make one comment. I think there's a great deal of misunderstanding about what we call full-time, what we call geographical full-time and what we call part-time. Now I could cite institutions where the so-called "geographical" full-time arrangement works quite well indeed and will continue to work so. My point would be that what's good for Yale might not necessarily be good for Colorado. What's good for Wisconsin is not necessarly good for Arizona. Again it comes back to this point: when you start a four-year medical school, and I certainly hope that you will, the kind of control that you develop on your clinical faculty should be developed in line with the problems of Arizona and not necessarly what works in some other institutions.

DOCTOR BOYCE: Two years ago our Liaison Committee between the medical school and the medical society began working on a project to determine just how to solve this problem. In the course of the investigation, questionnaires were sent to all the medical societies in which medical schools were located in their areas, and also they were sent to the deans of the medical schools. There was quite a variance in the different types of patterns that were functioning in different areas, and actually the whole context boiled down to the fact that it was a local problem to be worked out on a local level. Unfortunately, after we had assembled all these data, we were unable to get any action. There are discrepancies in the duties of a full-time professor. For example: If a full-time man carried approximately 80 private patients in the hospital, some of the people couldn't figure out how one could teach and do that much private practice. Medical students complained that some full-time professors rarely had any teaching contacts with them. I'm sure there are a lot of ways to work out this problem satisfactorily for all concerned if a sincere effort is made by the parties involved.

DOCTOR CLINE: That brings us then to a discussion of "Some of the Mechanisms of Trying to Work Out These Problems in Advance." What can be done to maintain good relationships between the faculty and the non-faculty medical men? With a tax-supported medical school, what part should the medical society have in its organization? Doctor Johnson.

DOCTOR JOHNSON: It seems to me that medical education in a community has to be completely integrated. I can tell the deans where their indigent patients are going partly. In Denver we have teaching programs at three of the private hospitals. In order to maintain the required standards, we must get every indigent patient that we can. Our house staff must do some surgery in order to get their certification from the board. So we're dabbling in indigent patient care in an institution which isn't set up to do it.

The medical school, on the other hand, is busy trying to get the private patient. The doctors seeking internships and residencies cannot decide which place they want to go. We even have them transferring from one program to the other. Believe it or not, some of them drop out of the program at the school to come to the program at the private hospital, and this is all wrong. We've got to work together on this whole problem.

When it comes to the question of the establishment of a medical school, it is of great interest to private medicine because it is our profession, because we are all taxpayers, and because we hope that we are all community and public minded people and that we take an interest in what happens in our area. In listening to these discussions today and having a chance to talk to men who look on the world from a little different window than I do, I have learned a great deal and I do not see any problem which can not be solved. I think that the doctors want to see that the school in their area is the best that it can be. Some of them will participate by teaching and, of course, the deans have a big problem: every doctor isn't a teacher. They must make the choices and pick the men who will really fit into their faculty. Some of the doctors in the area will receive from the institution. They won't be on the faculty, but they will be progressive individuals who will use the opportunity to learn. The doctors in the outlying communities will benefit by the programs of circulating teams of teachers who are sent out to teach short courses.

The schools on the other hand face a tremendous problem in finances. The ideal situation would be that wherein the dean faces the Legislature for the budget with the president of the state medical society right there beside him, saying this budget represents something that is necessary for the whole state, not just for a small group of men called at the school. We should be willing to give of our time and efforts to give them whatever free talents they can use and want. It seems to me that unless we do this, somebody else is going to interfere and tell all of us what to do.

DOCTOR CLINE: Doctor Royce, you care to comment?

DOCTOR ROYCE: I would say that this problem of getting money from a Legislator is a real job. It has been the policy of our County Medical Society as well as that of our State Medical Society to do whatever we could to influence the Legislature to grant the necessary funds to have a good sound medical school program. Recently, the head of one of our tax-supported medical schools went to the Legislature with the idea that he wanted to raise the salaries of all full-time physicians who were teaching clinical medicine and also the ones in basic sciences, to give them an adequate salary without having to do private practice. This would be an ideal solution to an extremely perplexing problem associated with medical education.

DOCTOR CLINE: Are there any comments from the deans? If they do not choose to comment I could say that an official of the California State Medical Association and I have gone to Sacramento, accompanied by Doctor Chandler, who was then the Dean at Stanford, to testify on behalf of the University of California Medical School, to assist it to obtain the appropriation it needed. After a program gets going that is, in general, the sort of co-operation which one can expect from the medical organizations and other medical schools within the state.

Now here is a loaded question, which I shall answer and shall not ask any member of the panel to answer. Perhaps due to the certain experiences I have had I may be in a better position to answer it. I shall not read the question as it is phrased, but I shall give the answers I believe the questioner wishes to have. The question asks for a comparison of training of osteopaths and doctors of medicine. Having spent some time studying osteopathic problems and having inspected five of the six schools, I think very briefly I may say this: on paper the admission requirements are identical to those of medical schools.

The inspectors pulled at least a hundred records of accepted and rejected students in the schools of osteopathy. There was no student admitted to a school of osteopathy who was not technically qualified for admissin to a school of medicine. The institutions where the osteopathic students obtained their pre-professional education are less renowned on the average than is true of applicants to medical schools. I say it in this way because I do not know that this necessarily infers an inferior degree of education, because some of the schools we know nothing about.

The average grades were lower by a small degree than those of students admitted to schools of medicine. The basic sciences are reasonably well handled in osteopathic schools. Some of them are extremely well handled in certain places. There is no anxiety as to the quality of the basic science education. Except in the field of pathology they are able to get Ph.D. teachers and some of them are excellent. Most of the heads of departments have taught in medical schools in some capacity heretofore. There are a few doctors of medicine who have reached retirement age and who are teaching in osteopathic schools the subjects which they previously taught in medical school.

The field of pathology is something else. There the competency of the average teacher was essentially below that of the other preclinical sciences. This is understandable, because the osteopathic schools cannot afford to pay the few osteopathic pathologists who get their heads above the crowd anything like the salaries that the private osteopathic hospitals will pay them. I inquired into what one of these pathologists made in a private hospital, and it was rather an extraordinary amount.

When it comes to the clinical years one finds a great deal more spotty educational program. There are places in which one would encounter clinics, lectures, and demonstrations which would be a credit to a medical school. There are other instances in which one would encounter presentations which would be an insult to a medical student. The average osteopath has suffered from a lack of opportunity to get a first-rate medical education. This is not uniform. I sat in the out-patient department of one of the osteopathic schools with the dean of one of our medical schols when the students were bringing up their patients to him for discussion. When we had the opportunity to be alone he said, "I wish I could get that average quality of instruction in our out-patient department." Encountering the sharp young teacher the next morning in the hallway I asked him, "Where did you get your medical training?" He said, "Wouldn't you like to upgrade their medical education?" They have the full curriculum of medicine. There is no deviation from that at all. It's just the same thing. In each school we pulled 100 charts on the hospital wards and 100 charts in the record room.

It is required that their hospitals have an entro-posterior and a lateral silhouette of the spine. The degree to which these are used varies. In one instance 200 charts showed no notation in the charts. Some research goes on in their schools but it is not extensive.

To give an overall broad picture is difficult. The components of their education are identical with ours. They can't match the quality of our medical schools as of the present time, but some of their schools are not too far distant from some of our medical schools. In the course of time I think there will be a change of attitude on the part of the medical profession, making it possible for the level of instruction to be improved and that very shortly some will become medical schools. I hope that answers the question. I refrained from reading the question because of certain implications in it. This is your meeting. If there are unanswered questions, I will be delighted to have them. Doctor Gustavson.

DOCTOR GUSTAVSON: There was one element brought out by Doctor Lippard or Doctor Turner, and it had to with the charging to the cost of medical education the cost of operating the medical school hospital. In setting up a medical school I think this is terribly important. At Nebraska, for example, there is written into legislation the requirement that for any patient who is referred by a county to the medical school for treatment, the county contributes — I think it's $4 a day. When the costs of treatment in the medical school are between $20 and $30 a day, it is charged to the medical school budget. This makes the medical schools costs look large and way out of proportion to what the medical education costs really are. So I would say that anybody contemplating a medical school should give thought to this problem. They should be most careful to see that these hospital costs are taken care of in the beekkeeping and *not* charged to the operation of the medical school.

DOCTOR CLINE: Are there further questions to the panel? If not, would any members of the panel care to comment further?

DOCTOR BOWERS: I think there is one. We're trying to think about the problems and questions that must be running through the minds of our audience in regard to location of medical schools. I'll stick my neck out and say that there is no pre-formula which one can use in deciding where to establish a medical school. There are many, many factors that enter into it in regard to the availability of a supply of teaching material. There are good medical schools which operate in communities of 20,000 and have a quite adequate supply of teaching material, and as you know the number soars up from there. I think I should say something about this, John, because I know that it is a question that must be very much in mind.

DOCTOR CLINE: Are there other comments from the panel? If not, than I shall try to sum up. It may be an individual summary with which everyone may not agre, but as nearly as I can I shall interpret the papers and the remarks which we have heard today. First of all, I started the meeting by stating that it was the purpose of this panel not to try to advise the doctors of Arizona whether they should have a medical school, what type of school or where it should be located. I think, however, pertinent points have been brought out as a result of the discussion here.

That Arizona faces a decision as of sometime in the future, with the progressive growth of the western population and the limitation of the opportunities for Arizona students to study medicine under the WICHE program is apparent.

There is no doubt in the minds of any of the members of the panel, at least as far as I could ascertain, but that a medical school increases the level of practice and the general tenor of medicine in any state in which it exists.

Arizona must decide whether it wishes to have a medical school and if so, what type and where that school should be located. I think the panel is agreed that a survey by an outside agency seeking the solution to some of those problems would be an advisable thing . . . that there should be no precipitate action in the establishment of a medical school anywhere. A medical school should be established only with adequate planning, whether it be a two-year school or a four-year school.

And that certain essentials, particularly for the four-year school but to some degree for the two-year school are as follows: (a) there must be adequate initial financing and assured future financing of the medical school, (b) it should have an association with a recognized educational institution of university stature, (c) there should be an adequate reservoir of patients, (That, of course, would influence your thinking to some degree as to location), and (4) there should be an adequate reservoir of qualified students.

That a two-year school is not ideal in the minds of medical educators, but that it is a satisfactory mechanism that can be employed, particularly if a four-year school is not possible. If a two-year school be established, there should be active planning from the outset for expansion into a four-year school to be implemented when it appears to be desirable and feasible. Recent trends usually continue for certain periods of time and point the way reasonably well for planning in the near future.

In the event that you decide to establish a medical school of either type, the school should be established with the active co-operation of the medical profession in the community. Medical leaders should be invited in on the original plans and the relationship between the medical school and the medical profession should be worked out in advance to avoid the unfortunate circumstances which have arisen to the disadvantage of medical education and medicine in general in some parts of the country.

I would like the members of the panel, if they choose, to add or to dissent from what I have just said in summary.

DOCTOR TURNER: I think it is a very excellent summary, Mr. Chairman.

DOCTOR BOWERS: I think it is very much better than we did. Amen.

DOCTOR CLINE: I had the advantage, of course, of cribbing on your notes. So thank you all very much personally for the hospitality that you accorded me here. I wish to thank the members of the panel, whom I think have done a magnificent job for you in making an effort to answer the questions which you have in your mind.

Editorial

THE PHYSICIAN AND PUBLIC HEALTH

The modern public health era began in this country about a century ago. In addition to recording vital statistics, the primary function of early health departments was the control of epidemic disease through sanitation of cities. With the coming of the Age of Bacteriology, control of communicable disease was put on a more rational basis. Studies on bacteria soon led to the production of several effective methods of immunization and of treatment. Discovery of the role of insect vectors and of healthy human carriers in the spread of disease brought other useful measures for the control of epidemics. Health officers also soon saw the necessity for supervision of the processing and handling of food and milk supplies.

As epidemic disease began to decline, early in this century attention was turned to the control of such important endemic diseases as tuberculosis and syphilis. Also careless and inhumane methods employed by many of the rapidly expanding industrial plants led to the demand for the control of health hazards in factories. This added industrial hygiene as a new responsibility in public health. At about the same period, the high death rates of women in child birth and of infants during the first year of life forced health agencies to undertake campaigns for the improvement of maternal and child care. Indeed it began to be clear that "the nature and scope of public health practice cannot be static, but must change with the needs and desires of the people and with progress in science and technology."

The results of physical examination of draftees in World War I revealed a shocking prevalence of chronic disease and physical defects among the young men of the nation, much of

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ARIZONA MEDICINE

Journal of

The ARIZONA MEDICAL ASSOCIATION, Inc.

AND

MEDICAL SOCIETY OF THE

UNITED STATES AND MEXICO

VOL. 17 FEBRUARY, 1960 NO. 2

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
7. Exclusive Publication — Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unusued manuscripts.
8. Illustrfations — Ordinarily publications of 2 or 3 illustrations accompanying an article will be paid for by Arizona Medicine. Any number beyond this will have to be paid for by the author.
9. Reprints — Reprints must be paid for by the author at established standard rates.

(The opinions expressed in the original contributions do not necessarily express the opinion of the Editorial Board.)

which was undoubtedly preventable. Realization of this situation led to a great increase of public support to medical research and to medical education. Soon measures to prevent pellagra and rickets and to treat diabetes and pernicious anemia became available. Other powerful tools for use in the fight against disease quickly appeared. Some of these, such as penicillin and streptomycin are for use in the treatment of individuals, others such as fluoridation of water supplies are for community application.

Through experience with communicable disease, a new science was developed – epidemiology, the diagnostic discipline of public health. The principles learned from the study of diptheria and typhoid fever are proving extremely useful in defining such problems as rheumatic fever, coronary thrombosis and lung cancer. These techniques for field studies are now applied with fruitful results to the evaluation of vaccines and drugs and for the clarification of the causal factors in road accidents and air pollution of cities. It appears certain that new dangers will arise and new health hazards be found as by-products of our rapidly increasing industrialization and of our growing urbanization. Obviously, putting more people into less space will give greater opportunities for sharing infectious disease.

What is the position of the practicing physician in respect to public health? Clearly, he has a dual interest: 1) as a citizen anxious for a healthful environment for himself and family. 2) as a professional man whose activities are of the greatest importance in the maintenance and improvement of the health of his patients. Every physician is a practitioner of preventive, as well as curative medicine. This is especially true in obstetrics and pediatrics. Individual physicians have made important contributions to preventive medicine through studies on their patients. A recent example of this was the observation by Dr. N. M. Gregg, of Australia, of the frequent occurrence of congenital defects in babies born of women who had suffered attacks of German measles during the first months of pregnancy. This discovery changed rubella from an infection of negligible importance to a disease of considerable social significance.

Surely, there is a third position that the physician may be expected to assume toward the public health. Of all members of the community, he is the most knowledgeable in all matters relating to the health sciences. He knows the potentialities of and the necessity for a group approach to the study of many diseases. He knows that unsanitary urban areas and the presence of unhealthy groups in the population endanger the health of all. He knows that the occurrence of preventable disease in the community adds to the tax burden of all. He above all is best able to support and to defend public health agencies and to see that his own community is well protected. Is not this a responsibility he should gladly assume?

Public health has been defined as the science and art of 1) preventing disease, 2) prolonging life, and 3) promoting health and efficiency through organized community effort. In the pursuance of these objectives, public health agencies should provide only such services as the individual cannot afford to provide for himself, or such as can best be provided on a community basis.

Never before in the history of man has it been possible to do so much to promote and maintain the health of the people. In the past, food, clothing and housing were considered the basic necessities of life. Recently, medical science by its concern for protecting and enhancing life and by its increased competence in so doing, is making medical and health care something universally desired.

Physicians have a great role to play in the improvement of human health not only by serving their own patients conscientiously, but also by insisting that adequate services for preventive medicine and public health be provided for the communities in which they live.

A. S.

"THE PILL THAT COULD CHANGE AMERICA"*

The "Pill" in this title, refers to socialized medicine – hence, the "could" should be changed to "would," and it should be supplemented by "and for the worse." This play of words can not change the excellency of the 28 page booklet published by the American Medical Association.

"The Pill That Could Change America" is one of the best compilations ever submitted for public consumption. It contains comprehensive facts, figures and opinions from all sections of the world which are well illustrated by charts and graphs. It is readable and persuasive yet retains an appeal which will attract readers.

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*May be ordered from: AMA, 510 N. Dearborn St., Chicago 10, Ill.

There are two things which we as individuals can do to halt the on-rush of the socialization of medicine. The first thing would be, become well versed with this booklet and secondly, see to it that "The Pill That Could Change America," receives the distinction of having the largest circulation of any one publication during the next year.

KOHL — JARRETT

(Not An Obituary)

The Board of Directors of the Arizona Medical Association has directed that The Journal of The Arizona Medical Association extend its resolved commendation to Drs. Harold Kohl and Paul B. Jarrett for their respective achievements, which have brought honor to them and secondarily to our Medical Association.

Dr. Kohl thought that better use could be obtained from the monies spent by some people for often not needed, unappreciated or even undesired gifts to Doctors as alleged Christmas gifts (some people hate maple sprup). This thought was turned into an idea — the idea worked up into a workable proposal — and the proposal was accepted and initiated by the Arizona Medical Association.

His proposal, in brief, was that druggist, drug houses, medical and surgical supply companies, morticians, etc. be requested, if they desired, to give donations to the American Medical Education Foundation, in lieu of gifts to doctors. This proposal was officially adopted by the Arizona Pharmacy Association and so recommended to its members.

Dr. Kohl had been dedicated for many years to his belief that we doctors should do more to help our schools and future doctors to better serve our fellow man. Hence, it was natural that he would channel the dollars to this purpose.

The mutual response last December was more than encouraging, with one single donor (the maple syrup man) contributing $1,000.00.

The American Medical Association, through its American Medical Education Foundation, was quick to determine the merits of Dr. Kohl's plan; but since he was anonymous to them, they have called it, The Arizona Plan and have made a National appeal, with a brochure entitled, The Arizona Plan. Millions of the citizens will be benefactors, because of Dr. Kohl's ingenuity.

With his ears open, his personal experience and his alert deductive mind, Dr. Paul Jarrett was able to quickly concieve that a great peril existed. Having this conception, he was cognizant of its impact and sent out the alarm. His deductions were so accurate that the whole nation was quickly informed of his discovery that plastic bags may kill. Today's Health, recently gave Dr. Jarrett credit for this alert, to quote. "A Phoenix, Arizona physician, Dr. Paul B. Jarrett, was first to point out the hazards of such bags and sheeting present after four local children died while playing with them. The Warning (Dr. Jarrett's) appeared in The American Medical Association News of February 9, 1959." Dr. Jarrett's warning was carried by Time Magazine and the nation's press releases.

Through Paul's keen deductions, character and compulsion, many, many lives will be saved for happiness and future progress. Those who love life and the progress of humanity, will always revere his name.

WHICH PATH TO MEDICAL SECURITY?

It is now twenty years since the medical profession gave birth to prepaid medical care, but its ultimate patterns of operation and control are yet to be determined.

While most of us recognize that the public will make the eventual decision, nevertheless we doctors have it within our power — if we will — mightily to influence that decision. For the simple fact is that, in the long run, the people — our patients — will support that system of medical care prepayment which offers them the best assurance of satisfactory professional service through physicians and institutions of their own choosing.

Today, several contrasting programs of medical prepayment are competing for popular and professional favor — each embodying a distinct concept of the relationship between patient and doctor.

One such program is the limited cash reimbursement program of the insurance industry, which offers the insured certain dollar indemnities against certain medical contingencies, irrespective of the physician's charges for the service required.

Another major program is medicine's Blue Shield Plan, which seeks — through professionally negotiated schedules of payment and, in most areas, through the agreement of participating physicians — to assure the patient of fully paid professional services.

A third program is the "closed panel" of physicians. Operating frequently under labor or other lay auspices, this plan undertakes to provide a comprehensive service through a selected group of physicians remunerated by salary or per capita allowance, regardless of the volume of service required of them.

Which of these programs most faithfully reflects the traditional pattern of American medical practice? Which program is most clearly motivated — as medicine itself is motivated — to render service to the patient and to meet the needs of all segments of the community? Which program returns the fullest value to the patient and most fairly compensates the doctor? Which program best utilizes and protects the modes and ideals of practice that have earned American medicine the envy of other lands?

Which program will the American doctor favor — in the common interest of medicine and the people?

DMCT TERMED "VERY STABLE"

Thirteen papers were presented on demethylchlortetracycline (DMCT), a new form of tetracyline derived from a mutant strain of streptomyces. Studies were reported in which DMCT in 150-mg. doses was compared with other tetracycline." Biliary excretion of this new derivative produce more prolonged blood levels as a result of its increased stability and slower renal clearance. Garrod, of St. Bartholomew's Hospital, London, who was moderator of this session, referred to it as "the stabilized form of chlortetracycline." Biliary evcretion of this new derivative is not significantly different from that of older forms. It was stated that, in general, bacteria are at least as susceptible to DMCT as to other tetracyclines.

(from Seventh Annual Antibiotic Symposium, Nov. 4-6, 1959, Washington, D.C.)

RINGWORM PLAGUES 5,000,000 PEOPLE AT ANY ONE TIME

The kinds of ringworm cases that physicians are treating:

2,500,000 Cases of Tinea Barbae, Tinea Corporis, Tinea Cruris and other Tineas
400,000 Cases of Dermatophytosis (Dermatomycosis)
300,000 Cases of Tinea Capitis
30,000 Cases of Onychomycosis

(from New Medical Materia, Vol. 1, No. 10)

Women lead in cancer incidence — up to age 57, but chances of survival are better for women than men.

(from New Medical Materia, Vol. 1, No. 10)

SAFEGUARD FREEDOM BY VIGILANCE

If each of us would exercise vigilance to safeguard our liberty, rapidly growing collectivism could be stopped in its tracks — and eventually destroyed. Dr. Curtis W. Caine (Jackson, Mississippi), a Director of AAPS, recently demonstrated how true patriots should react and act to schemes that feed the cavern mouth of collectivism. Dr. Caine, who flies his own plane, received a communication from the Mississippi Aeronautics Commission urging support for a program for federal aid for airport construction. Dr. Caine replied as follows: "The cart is before the horse. Instead of us going to Washington, hat in hand, and begging federal funds (our own money which has been confiscated), we should build our own airports and roads, do our own house building and power producing, and let Uncle Sam come to us, hat in hand, and beg for funds to keep Washington going. At present, out of every dollar Mississippians have extracted from them by Washington in the form of taxes only fifty cents ever gets back to us in any grant, subsidy, or 'gift.' So, a dollar kept in Mississippi would do two times what it now does when it goes to Washington and is 'given' back to us. The brokerage fee is 50%. And Mississippi is second best off. Wyoming gets 52% back. But California gets only 9½%, Delaware 9.75%, etc. begging has got to cease somewhere. Let's make it Mississippi. Let's ask for *nothing*. Let's do it ourselves — at half the price."

(AAPS Bulletin No. 19-59)

NIAMID
the mood brightener

makes the cancer patient more comfortable

- reduces impact of pain
- decreases narcotic requirements
- increases appetite
- improves mental outlook

NIAMID lessens the need for narcotics in the depressed cancer patient and appears to potentiate pain-relieving agents. As pain is reduced and mental outlook improves, apprehension and depression are replaced by a brighter and more alert attitude, and appetite returns. The family, too, is cheered by the improvement in the patient's condition. With NIAMID therapy, patient care becomes noticeably less demanding.

Supply: NIAMID (brand of nialamide) is available as 25 mg. (pink) and 100 mg. (orange) scored tablets.

Complete references and a Professional Information Booklet giving detailed information on NIAMID are available on request from the Medical Department, Pfizer Laboratories, Division, Chas. Pfizer & Co., Inc., Brooklyn 6, New York

NIAMID®
the mood brightener in cancer

Pfizer
Science for the world's well-being™

DOES YOUR PRESENT ANTICHOLINERGIC REALLY
NOON
3 P.M.

The test—you might say the acid test—of an anticholinergic is simple: will it protect your patient from hyperacidity around the clock, **even while he sleeps.** The weakness of t.i.d. or q.i.d. preparations is well recognized; but even some "b.i.d." encapsulations may be unreliable. McHardy, for instance, found a "widely variable duration of action, definitely less than that anticipated" in the "sustained," "delayed," and "gradual release" anticholinergics he studied.[1]

COMPARE THE DATA ON ENARAX . . . the new combination of an **inherently** long-acting anticholinergic (oxyphencyclimine) and Atarax, the non-secretory tranquilizer. Note the effectiveness of oxyphencyclimine:

OBSERVE THE OXYPHENCYCLIMINE REPORTS . . .

McHardy: "[Oxyphencyclimine] has proved to be an excellent sustained-action anticholinergic in our study of this agent over a period of eighteen months."[2]

Kemp: ". . . for the majority of patients, one tablet every 12 hours provided adequate control. This characteristic long action . . . may constitute an advantage of this drug as compared to coated 'long-acting' preparations of other compounds."[3]

Add Atarax to this 12-hour anticholinergic. The resulting combination—ENARAX—now gives relief from emotional stress, in addition to a reduction of spasm and acid. Atarax does not stimulate gastric secretion. No serious adverse clinical reaction has ever been documented with Atarax.

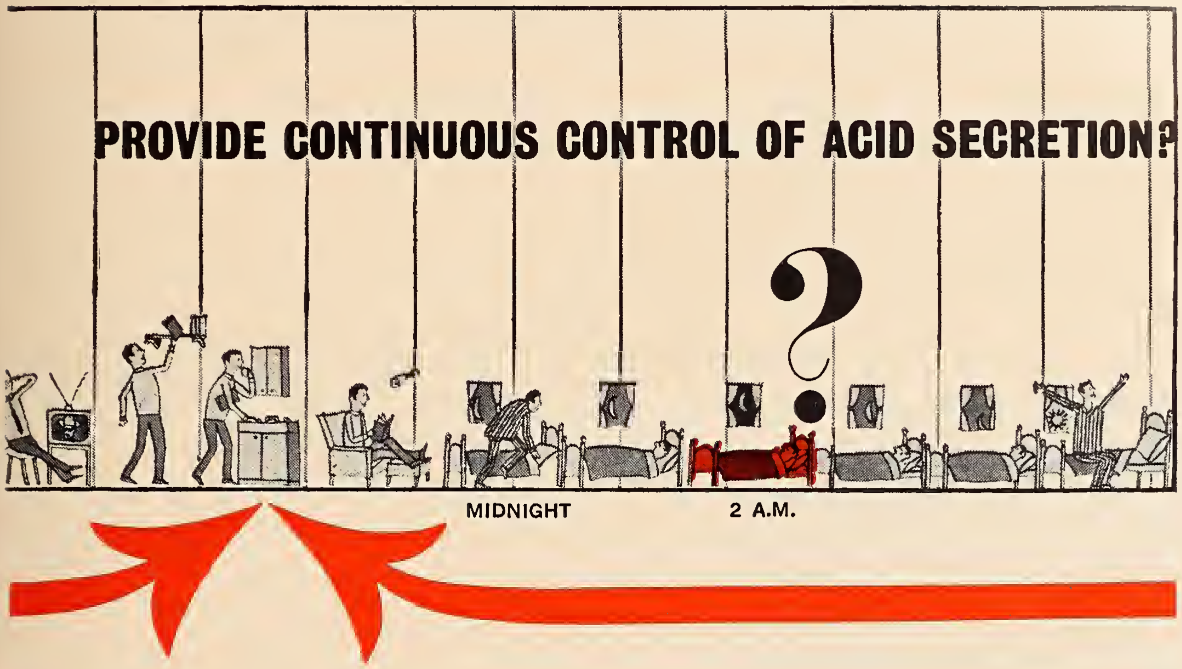
LOOK AT THE RESULTS WITH ENARAX[4,5]:

Does the medication you now prescribe assure you of all these benefits? If not, why not put your next patient with peptic ulcer or G.I. dysfunction on therapy that **does.**

ENARAX®

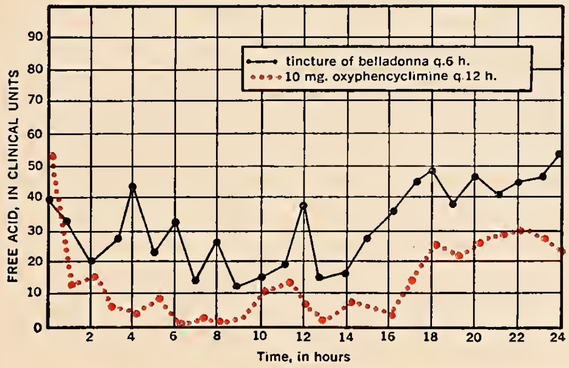
(oxyphencyclimine plus ATARAX®)

A SENTRY FOR THE G.I. TRACT


PROVIDE CONTINUOUS CONTROL OF ACID SECRETION?
?
MIDNIGHT
2 A.M.

"Prolonged periods of achlorhydria" after 10 mg. oxyphencyclimine q. 12 h.[2]

MEAN GRAPH OF GASTRIC ACIDITY IN 4 PATIENTS RECEIVING COMPLETE THERAPEUTIC REGIMEN • 24-HOUR STUDY



Clinical Diagnosis: Peptic Ulcer—Gastritis—Gastroenteritis—Colitis—Functional Bowel Syndrome—Duodenitis—Hiatus Hernia (symptomatic)—Irritable Bowel Syndrome—Pylorospasm—Cardiospasm—Biliary Tract Dysfunctions—and Dysmenorrhea.

Clinical Results: Effective in over 92% of cases.

As for Safety: "Side reactions were uncommon, usually no more than dryness of the mouth. . . ."[4]

Each ENARAX tablet contains:

Oxyphencyclimine HCl	10 mg.
Hydroxyzine (ATARAX®)	25 mg.

Dosage: One-half to one tablet twice daily—preferably in the morning and before retiring. The maintenance dose should be adjusted according to therapeutic response. Use with caution in patients with prostatic hypertrophy and with ophthalmological supervision only in glaucoma.

Supplied: In bottles of 60 black-and-white scored tablets.

References: 1. McHardy, G., et al.: J. Louisiana M. Soc. **111**:290 (Aug.) 1959. 2. Steigmann, F.: Study conducted at Cook County Hospital, Chicago, Illinois, in press. 3. Kemp, J. A.: Antibiotic Med. & Clin. Therapy **6**:534 (Sept.) 1959. 4. Leming, B. H., Jr.: Clin. Med. **6**:423 (Mar.) 1959. 5. Data in Roerig Medical Department files.

ROERIG

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Division, Chas. Pfizer & Co., Inc.
Science for the World's Well-Being™

In Memoriam

FORREST L. REESE, M.D.

1885—1959

1885—1959

Dr. Forrest Leslie Reese, 74, long-time resident of Phoenix, died Thursday, October 1, 1959, in St. Joseph's Hospital.

Born in Paris, Illinois, Dr. Reese came to Phoenix in 1919 from Bicknell, Indiana, following his discharge from the medical corps of the army. He had served in World War I as a surgeon in France.

In Phoenix, Dr. Reese, an eye, ear, nose and throat specialist, was one of the first occupants of the Professional Building. He retired in December 1954.

Dr. Reese was a graduate of the College of Physicians and Surgeons, University of Illinois. He did his internship in the Cook County Hospital in Chicago, finishing in 1910 and practiced in Indiana until he entered army service. He was a member of Alpha Omega Alpha, honorary medical fraternity.

For many years Dr. Reese was active in the Phoenix Little Theater and played roles in many of the theater's productions. He also directed many of the productions.

He joined the Little Theater when it was housed in an old barn on the Heard property on McDowell Road, just off Central. He was past president of the Phoenix Little Theater.

He also was a past president of the Phoenix Lions Club, serving in 1929 and 1930. He was a life member of the Arizona Club, a member of the American Medical Association and the Arizona Medical Association and the Maricopa County medical societys.

Dr. Reese resided at 701 W. Monte Vista and is survived by his wife, Anna Mae, a daughter, Miss Jane Reese, Phoenix; and two sisters, Mrs. William Stotts and Mrs. Harry Huffman, both of Vermillion, Illinois.

RUPERT B. RANEY, M.D.

1900—1959

Word has been received of the death of Dr. Rupert Raney, 59, of Los Angeles on November 28, 1959.

Dr. Raney, who died suddenly while on a hunting trip in Indiana, was a prominent neurosurgeon in California. He was past president of the American Academy of Neurological Surgery, a member of the Harvey Cushing Society, a Fellow of the American College of Surgeons, and President of the Western Neurosurgical Society. He was professor of neurosurgery at the University of Southern California.

Dr. Raney was well known in Arizona. He practiced in Phoenix from 1929 to 1932 and was a frequent visitor to the state.

Arizona Medical Association Reports

ANNUAL MEETING QUESTIONAIRE: II

The plans for the 1960 Annual Meeting are complete. The speakers have all accepted the invitation of the Association, final times have been assigned for papers and specialty society meetings, and Auxiliary events, exhibits, and social activities have been fitted into the program. It remains only to let the membership know what pleasures and educational riches await it.

The program has been tailored to the wishes of the physicians who answered the questionnaire mailed last fall. In response to the strong expression of preference for increased stress on professional content, the three general sessions are entirely devoted to scientific presentations. Little interest was indicated in medico-legal and medico-economic topics, and none, therefore, have been scheduled. A dilemma has been posed by a strong demand for talks of practical pertinence for every day clinical practice, and a sizable minority opinion asking for representation of material of research or specialty concern. It is hoped that a solution has been found by careful selection of speakers and thoughtful assignment of subjects and by the provision of ample time for specialty society gatherings, amounting to special sections. Finally, following suggestions on the questionnaire, each scientific session has been centered on a single theme, so that a member will not go for a full day to hear just one paper in his field of particular interest.

The first general meeting, on Thursday, May 5th, is devoted to pediatric and orthopedic medicine, and most of the speakers will present papers of joint interest in the two areas. Specialty pediatric and orthopedic society luncheons will follow, and, as a change of pace, the Arizona Chapter of the American College of Chest Physicians will be host for those who want to hear of recent medical and surgical advances in pulmonary and cardiac disease. Thursday night the Arizona Academy of General Practice will have a banquet with a psychiatric speaker, and the Arizona Society of Anesthesiologists will entertain with an anesthesiologist as featured guest. All these luncheons and dinners will be open to every registrant. The focus of the second day is on psychiatry, with seminars on hypnosis in surgery and on psychiatric problems in the specialties, psychiatric papers, a talk on addiction as seen by the Internal Revenue Department, and a report on psychopharmacology by a research man from a major drug house. The Association has this year invited the latter as one of the regular guest orators, an innovation which it is hoped may be a regular feature in future years, the pharmaceutical firm being chosen by lot for each meeting. Specialty society luncheons on Friday will be held by the Arizona Chapter of the American College of Surgeons, the Arizona Society of Allergy, the Southwestern Obstetrics and Gynecology Society, and the Arizona Society of Pathologists. The third and final scientific session will be given over to various aspects of modern surgical problems and will include, in addition to pure surgical and gynecologic topics, presentations in associated fields such as anesthesia, transfusion reactions, and the internist's role with the surgical patient.

Next month *Arizona Medicine* will give you an account of our guest speakers. To titillate you for the moment we only call the roll: a pediatrician, an anesthesiologist, an allergist, an orthopedic surgeon, a cardiac surgeon, an internist of special competence in the field of respiratory diseases, a top expert from the Internal Revenue Department in the field of narcotic addiction, a psychiatrist, a gynecologist, a pathologist, and the medical director of a leading drug company.

A non-scientific postscript. The Women's Auxiliary is again sponsoring a hobby and art show for members of the Association and their wives. Each of you who has an unusual interest or a creative talent, the evidences of which you can be induced to display, is urged to prepare an exhibit. Information may be obtained from the President of the Auxiliary, Mrs. Hiram Cochran, 35 North Camino Espanol, Tucson, Arizona. First, second, and third place ribbons will be awarded in each of at least three categories: fine arts, hobbies, and photography. There will also be a best of show trophy. The exhibition will be housed in the lobby of the auditorium, and, rather than have outside judges, the viewers will be asked to vote their choices. The results will be announced at the President's dinner-dance on Friday night.

If you don't want to put in an entry for the Association's special award paper, we will at least welcome your paintings, your photographs, or your button collection.

PUBLIC HEALTH PROBLEMS IN ARIZONA

It is evident to many of the citizens of the state that the situation in regard to the State Department of Public Health is critical. We have one of the weakest State Health Departments in the United States. It is poorly prepared in terms of organization, facilities, and staff to meet the public health problems that are faced by one of the most rapidly growing states in the United States. Many factors have contributed to this: the unprecedented increase in the population is undoubtedly one, but more basic is the lack of knowledge of the true situation and the lack of interest and concern on the part of the majority of the citizens of the state including, we regret to say, the medical profession.

The present Commissioner of Health is serving a temporary (2 year) term in order to enable the State Board of Health to find a successor. The salary for this position set by statute is so unrealistically low ($10,000) that no adequately trained and qualified public health physician has been interested in the position. It may be noted that in some of the other Western States the salaries for the State Commissioners of Health are: Washington — $17,500, Nevada — $14,676, Oregon — $17,500, Utah — $14,400, New Mexico — $15,000, and Colorado — $16,500.

Salaries for other professional positions in the department are equally low. This might be expected when it is realized that the per capita expenditure for Public Health in Arizona is currently 41.8 cents, whereas an accepted level throughout the country is approximately $1.00. This situation is the principle reason for the resignation of thirty-four members of the department during the past year with several other resignations expected to be announced after January 1st. Except for the dedicated service of a few of the key personnel, the department would be in even worse condition than it is.

As a result of this apathy on the part of the state's citizens and its physicians we have:

1. The highest mortality rate from Tuberculosis in the United States today — 20.7 as compared to 7.8 in the entire United States, 2.5 in Utah and 6.6 in Clorado. This means that the chances of dying from Tuberculosis in Arizona are almost three times as great as they are in most other areas of the United States, and almost nine times as great as in Utah.

2. Arizona ranks second only to New Mexico with an infant death rate of 51.7 as compared to 39.1 for the United States as a whole.

3. Our situation in respect to the communicable diseases, especially the so called "Filth Diseases," is very poor when compared to other western states and the United States as a whole. These facts are especially important when we have seen during the last few months a decrease in the number of badly needed Tuberculosis beds at the State Sanitorium which were closed because of lack of funds, and we have been informed that the State Laboratory is unable to perform certain needed services because of insufficient funds to obtain the necessary equipment and personnel.

What is to be done about this situation and what can we as citizens do to help?

The following list emphasizes some of the most oustanding needs of the State Health Department at the present time:

1. The statutory limit on the salary for the Commissioner must be raised by the Legislature to a level which will allow the State Board of Health to em ploy a qualified successor to the present Commissioner.

2. Similarly there must promptly be salary adjustments in the department in order to hold the

present professional personnel and to attract additional competent personnel into the organization. This will require only that the Legislature reappraise the financial needs of the department with an adequate salary schedule in mind.

3. Epidemiological and laboratory facilities and personnel must be increased, especially in the field of Viral Diseases and Industrial Hygiene.

4. More effective control of the communicable diseases, particularly of Tuberculosis and Diarrheal Diseases, is necessary. This too means more personnel and more adequate laboratory and hospital facilities.

5. Better overall leadership in the development and functions of local health departments. Considerable progress has been made in this field in recent years, but great areas of the state are still without local health services.

6. We badly need an integrated and coordinated School Health Program in our primary and secondary schools. This should be done at a State level and correlated at the County level to fit the various needs of the communities.

7. Closely related to the School Health Program is the need for the development of an adequate Dental Health Service. A start has been made in this through the activity of the State Dental Assn., but much remains to be done.

These are only a few of our needs. In the immediate future, we must take a long analytic look at our overall program of Public Health in the State and plan more concretely for its development. The time is at hand when we must face the problems of Air Pollution and the new industrial health and sanitation problems that the industrial development and the rapidly increasing population are bringing to the State.

Only by the concentrated interest and effort of all of the citizens of the State can we impress upon our legislative bodies the need for a vitalized forward looking State Department of Health adequately staffed, equipped, and supported to give the citizens of Arizona a level of health protection equal at least to the other parts of the United States. In such a program it is only logical to assume that the physicians and dentists of the State will be willing to take an active part as a group interested primarily in raising the health standards of the citizens of the State.

December 18, 1959

PROFESSIONAL COMMITTEE

RELATIVE VALUE FEE SCHEDULE

Wallace A. Reed, M.D., presented the following report containing his views in the matter of possibility of arranging a mutually agreeable Relative Value Fee Schedule for services rendered by doctors of medicine in the State of Arizona applicable to include industrial and commercial usage.

THE PROBLEM...

1. Medical costs are rising.

2. There is growing resentment about the poor coverage provided by most insurance companies.

a. Doctors are blamed.

2. Parties responsible for obtaining health insurance for large groups are blamed (included here are bankers and newspapermen, as well as Union representatives).

c. Insurance companies are blamed. The latter respond by stating that they cannot set up a realistic payment schedule without knowing what the standard fees are for a given community.

3. A tornado is brewing which will force us into socialized medicine soon unless we take appropriate affirmative steps to solve the problem ourselves.

The words of Doctor L. F. Koyl, Contributing Editor of Current Medical Digest, are worthy of consideration in this connection. He states:

"The medical profession is losing its dominance of the social sciences on all counts. It is losing the natural right of leadership because it is tending to become a conservative self-restrictive profession instead of a widely based social science constantly broadening its scope. Society itself is finding the leadership of medicine irksome because medicine no longer talks the language the public wants to hear. Society is interested in the social and economic aspects of medicine. Doctors tend to withdraw from such strange things into the safety of 17-ketosteroid estimations.

"An anchorite in his cave or a monk in his monastery may be dedicated, but not to the common weal. He can have no effect on current events except the negative effect induced by the absence of his counsel. If medicine wants to withdraw into itself and become an esoteric and specialized science, such as atomic physics, the profession will become a follower of public opinion, not its architect; an employee of the public, not a servant of the people."

A practical application of Doctor Koyl's philosophy is broached by Horace Cotton, who wrote in Medical Economics in June of last year that "State Medicine Can't Be Stopped." His chilling conclusion:

"If ever John Q. Citizen gets an American version of Britain's National Health Service, he's going to like it. And you're going to make it work. As a law-abiding U. S. physician, you'll have no practical alternative.

"So if you don't want state medicine, don't kid yourself that you can hold it at bay simply by saying that it's un-American. Your answer to any proposed American National Health Service must be this: 'We don't need it. We've got something better already.' But it isn't enough for you to believe what you say. The American public has got to believe it, too.

"Because British doctors failed to get that message across, Government medicine fastened itself on that country . . . Today the system is firmly entrenched. I'm afraid that's what will happen here unless American doctors work harder to improve private medical service and to sell the public on it. . . ."

THE SOLUTION...

The solution lies in following the leadership of this Association's Professional Committee which acted favorably on a resolution to the effect that "it is both medically ethical and medically desirable that the county societies accept and in principle approve a standard relative value fee schedule for industrial and commercial groups."

Such a plan has been followed by the Riverside County Medical Association in an agreement reached with Food Machinery Corporation and CPS. Other medical societies have taken similar action.

At a recent meeting in Phoenix, physicians discussed this problem with representatives of management, labor, and an insurance company. The unofficial conclusions reached were as follows:

1. Management and labor both are interested in paying a fair fee for services rendered by physicians, but they would like to know what a fair fee is.

2. In response to the question whether it would help to know that a multiple of 5 (for example) would be considered a fair fee for the local area, the answer was "yes."

3. These people all seem to like us, but they are perplexed by our aloofness.

CONCLUSION...

1. The California Relative Value Schedule represents the first well-thought-out response to the need for a standardized fee schedule.

2. There is reason to believe that such a schedule will be acceptable to the three interested parties: the patient, the physician, and the insurer.

3. The time to adopt such a schedule is at the next Annual Meeting. This will allow time meanwhile for a review and revision of the Schedule by the various interested generalist and specialist groups.

Doctor Reed also presented for review "The Riverside Plan for Health Care" designed to provide "Guaranteed Coverage for Benefits under the Plan with the Physician Receiving His Usual, Customary, and Reasonable Fee."

Doctor Reed further stated that one possible application which would avoid the need to work in any conjunction with the Union would be to try and provide state wide coverage for everybody in the state. We have compulsatory insurance to pay for the automobile liability insurance. I see no reason why we should reject the possibility of such a concept to apply to insurance for health coverage; then, that would eliminate the union leaders as a middle man. If we made an offer known to the entire population that said: "We will give you coverage," and make a real campaign out of it, we could turn it to our advantage and if we made it work in Arizona, it might well be the pattern which would be followed throughout the entire United States. I think if such a plan were followed, it certainly would take the wind of the sails of those who are pushing toward government socialized medicine.

Also presented for the enlightenment of the Committee was a copy of the October 1959 issue of the "News Letter" of the "Association of American Physicians and Surgeons" dealing with "Relative Value Schedules" and the opposition thereto.

Doctor Reed was interrogated at length and considerable discussion was held by the Committee on the subject.

It was moved by Doctor Taber, seconded by Doctor Gregory, and unanimously carried that the Professional Committee strongly recommends to the Board of Directors that it is the firm conviction of the Professional Committee that this matter be thoroughly explored and investigated by an existing committee of the Association; that, if there is no proper committee, therefor, that one be formed; and, that the objective of the committee will be to report and make a recommendation which might be considered at the next regular meeting of the House of Delegates.

Doctor Reed left the meeting at this point.

AGING

Jesse D. Hamer, M.D., delegate to the American Medical Association, presented a detailed report on the activities in the field of Aging including:

(a.) The Salt Lake City, Utah, Conference on Aging held May 8 and 9, 1959;

(b.) The Joint Council for Improvement of Health Care of the Aged held in Washington, D. C., June 12 and 13, 1959;

(c.) The National Leadership Training Institute held in Ann Arbor, Michigan, June 24 through 26, 1959, preparatory to The White House Conference on Aging.

Comments were also offered reporting on the progress being made by the "Steering Committee for The White House Conference on Aging" appointed by Governor Fannin, representing the State of Arizona. Associate with the problem of

"Aging", Doctor Hamer further reported on the hearings, which he attended, representing Arizona, before the Congressional House Ways and Means Committee, July 21, 1959, specifically dealing with H. R. 4700, known as the "Forand Bill," a proposal to amend the Social Security Act to provide for the federal purchase of certain health care services for social security beneficiaries. Some sixteen million persons eligible for social security benefits (mostly those over sixty-five) would be entitled to receive hospital, surgical, and nursing home treatment under a government-run program. The government would contract to pay hospitals, nursing homes, physicians, and dentists for the services they would provide.

Doctor Hamer further reported on the hearings of the (Senate) McNamara Committee on the subject of Aging, which were being held in selected localities throughout the country for the purpose of ascertaining the needs of the "Aging" designed to develop support for the Forand Bill or similar legislation.

Subcommittee on Aging

Doctor Schwartzmann indicated that Doctor Wormley, Chairman of the Subcommittee on Aging, had asked to be released of his assignment.

The Professional Committee determined to request of the President of the Association to make an interim appointment to the Committee, specifically designating such appointee Chairman of the Subcommittee on Aging, requesting Doctor Wormley to continue as a member of the Professional Committee to accept reassignment of duties by that body.

On recommendation of the President, it was directed that Otto E. Utzinger, M. D., of Scottsdale, be contacted to determine whether or not he would serve as an interim appointee to the Professional Committee for assignment as Chairman of its Subcommittee on Aging.

BOARD OF DIRECTORS – ACTIONS

The Board of Directors of this Association in meeting held October 11, 1959, concurred in the following recommendations of the Professional Committee authorized during its meeting of August 9, 1959:

1. That the Board of Dirctors of this Association continue actively its opposition to the Forand Bill H. R. 4700 as an impractical and impossible solution to the problems of the aging.

2. That the Association continue acceptance of and further encourage the development and/or extension of voluntary private and Blue Cross-Blue Shield health insurance programs to include individuals 65 years of age and over. even to the extent of providing coverage for rest home or nursing home care as well as for care in the home itself.

3. Reaffirming the philosophy of conservatism in approaching the problems of aging.

4. Co-sponsoring the 9th annual cancer seminar to be held at the Arizona Biltmore, Phoenix, January 14, 15 and 16, 1960.

In the matter of standard relative fee schedules for industrial and commercial groups, the action of the Professional Committee was considered and amended as follows:

"That is is medically ethical that the county societies may accept the principle of the relative value fee schedule for industrial and commercial groups, the unit value to be separately negotiated for each group."

NORTH MOUNTAIN HOSPITAL

Doctor T. Richard Gregory (Phoenix); Doctor Joseph M. Kinkade, (Tucson); and, Doctor Robert B. Leonard (Phoenix), comprising a special investigation team of this Committee, gave a preliminary report on the investigation of the North Mountain Hospital, Phoenix, conducted with the full cooperation of Kenneth E. Hall, M. D., Director of that institution.

It was determined that no recommendations be made or action taken at this time until the investigating committee correlates the results into one report to be submitted at an early date.

For the information of the Professional Committee, it was also reported that the Joint Commission on Accreditation of Hospitals is to conduct a survey of the North Mountain Hospital in the very near future on application of the institution for accreditation. It was suggested that legal advice might be sought as to whether or not the survey report could be made available to this Committee.

SUBCOMMITTEE REPORTS

Aging

In the absence of Doctor Wormley, he submitted the following written report:

"I have attempted to abstract the material that you sent me and also that which I had in my possession prior to receiving your bundle.

July 21, 1959 from Washington, D. C.

Dr. Jesse D. Hamer submits a report to the House Ways and Means Committee on H. R. 4700 as a member of the House of Delegates of the American Medical Association from Arizona. Dr. Hamer pointed out the importance of lay and professional councils at the state level to study the health problem of all age groups in the community; the importance of preventive medicine. Pointed out also the non-restrictive character of the Arizona Blue Cross-Blue Shield policies that have been in existence for some years.

Sept. 10, 1959 from Washington, D. C. also — we have a progress report of the McNamara Committee. Mr. McNamara reported to the Senate on the problems of the aged and aging "Adequate income, decent housing, good health and a dignified place in society for our 15½ million citizens over 65 years of age and 20 million over 60 are among the most important problems currently facing the Congress and Nation." "In preparing for this study, some of the most informed people in the nation were asked to meet with members of the subcommittee. The facts that were brought out by these people were as follows: 'In 1900 there were only 3 million Americans over the age of 65. Today there are nearly 16 million and in 10 years there will be an estimated 20 million.' " McNamara's Committee of experts also brought out the fact that 60 per cent of those over 65 have less than $1,000 a year in money income. Investigation brought out also that a crisis could be caused by two forces alone; First, the rapid increase in the number and the proportion of Americans over the age of 65 and second, the gradual but definite decrease in the proportion of such people in the labor force. No. 3, the medical needs of the aged include:

(1) Deterioration should be prevented rather than repaired.

(2) Rehabilitation necescary for those restored to good health by modern medicine.

(3) Aged persons require 2½ times as much hospital care as the younger groups.

(4) Inadequate hospital and surgical insurance exists today.

(5) Financing of medical care on a subsistence income is almost impossible.

The statement of the American Medical Association to the Subcommittee of Senator McNamara of problems of the aged were expressed by Dr. Fred C. Swartz, Chairman of the A.M.A. Committee on Aging, on August 5, 1959. Dr. Swartz's report might be summarized by the following quotation from his report:

"In our society, the responsibility for taking care of the old person rests primarily with his family. If the family cannot fulfill this responsibility, then it passes to the community, then to the State. Only as a last resort should the federal government step in."

Abstract as of July 21, 1959 — the procedure of the McNamara Committee on aging with its invited participants is here outlined. All findings and legislative recommendations are to be reported before January 31, 1960. Seven major subjects will be examined during the series of hearings, July 23rd to 24th and then July 28th to 30th and August 4th to 6th. Later in the year other hearings will take place in a number of leading cities. The seven subjects to be discussed are as follows:

1. Housing for the elderly and the responsibility of the Federal government.
2. Job discrimination against the worker over 45.
3. Financing adequate medical care for the older person.
4. Conditions of nursing homes, and the problem of setting decent treatment standards.
5. Measures to prevent physical and mental deterioration of older persons.
6. Adequate income for retired persons.
7. Elements necessary to ensure a productive, meaningful life for those retired from regular employment.

Invited to appear before the committee were representatives of:

Department of Health Education and Welfare
Department of Labor
Veterans Administration
Civil Service Commission
Housing and Home Finance Agency
American Medical Association
Food and Drug Administration
Senator Jacob H. Javitz of New York
Newspaperman Paul R. Leach
Clinton S. Golder, Vice Pres., United Steel Workers of America AFL-CIO
American Legion
American Dental Association
American Nursing Home Association
Volunteers of America
Nat'l Association of Blue Shield Plans
American Nurses Association
American Public Health Association
National Committee on Aging
and many others

Abstract as of August 20, 1959, coming from the office of Senator McNamara from his Committee on Aging is the following statement: Older citizens themselves are to be heard pretty soon by the Subcommittee on aging at hearings to be held in cities across the nation during the months of October, November and December.

The Subcommittee that will hear these oldsters in their own back yard will consist of Senators John F. Kennedy, Joseph F. Clark, Jannings Randolph, Everett M. Dirksen and Barry Goldwater.

Abstract as of Sept. 18, 1959 and released also from Senator McNamara's office and stated by the Senator in one of his speeches in which he reiterated many of the points he has previously spoken about is the following:

"We hope that the work of this Subcommittee will lay the foundation for a systematic consideration by the Senate of the needs of our older citizens, and the contributions they can continue to make to the Nation."

October 12, 1959 — Summary of some of the expert views before the McNamara Committee. The highlights of these views might be briefly stated as follows:

"The growing size of the older population of America can be used — even exploited — for good or for bad, depending on whether or not the older citizens receive a 'fair deal' from the rest of the country. Testimony revealed that when communities have taken older citizens' needs into account, the older citizens have approved programs for all the residents. On the other hand, it was pointed out the older citizen in a number of communities are showing their resentment against being 'left out' by voting against local school bonds and village proposals.

"One witness said, 'If we do not meet the needs of the senior citizens, and help them to be contributing members of society, we are endangering our democratic system of government. Instead of democracy, we may very easily have a gerontocracy.'"

Abstracted as of October 27, 1959. Note is made of the receipt by the Society of a copy of the Proceedings of the First National Conference of the Joint Council to Improve the Health Care of the Aged, held in Washington, D. C., June 12 and 13. A report on this will be given at this meeting by Dr. Jesse Hamer.

October 19, 1959 – The following is a report of the McNamara Committee meetings held in Boston October 13 and 14. The major portion of the audience consisted of older persons and attendance reached a high of 400 at one time. In all 34 witnesses gave oral testimony before the committee. In addition, a number of others submitted written testimony which was to have been made a part of the record. Ten of the witnesses endorsed the principle of Forand type legislation in their presentations. These endorsements came primarily from politicians, career public health officers, university professors, and others committed to the philosophy of expanded government intervention in all walks of life.

October 26, 1959–Report of McNamara Commitee meetings held in Pittsburgh, Pa. October 23rd, Representative William S. Moorhead proposed conversion of downtown hotels into retirement homes for the elderly.

The Director of Catholic Charities, United Jewish Federation and Director of the Pittsburgh Lutheran Service Societies all agreed that the problems of the elderly are essentially local responsibilities.

Dr. Daniel H. Bee, Chairman of Pennsylvania State Society's Board of Trustees stated:

1. His medical society is composing plans for a significant reduction in the cost of medical care to the elderly.
2. Sol Stetin, Regional Director of Textile Workers Union of America, "Great need for the Forand Bill and predicted it will be adopted."
3. United Workers called for a "cradle to grave security for Americans as the birthright of every American." The Union proposed free medical care to everyone in this country through a British type program.

NEWS ITEMS:

Research on the use of *H3* in the treatment of old age and other diseases.

By the Pharmical Company of Los Angeles. This drug is a derivative of procain called Papacaine and used with reported success in Roumania and Germany. Dominant 5 CC ampoules, given inter-muscularly three times a week for four weeks with a rest period of ten days. It is said to accomplish the following:

1. Appears to make old people younger than their actual age.
2. They experience a marked improvement in general health.
3. Some find new hair growth and youthfully dark in color.
4. Restores hair to the bald.
5. Brain functions improve.
6. Circulation seems to improve.
7. Has helped arthritis tremendously.

ADDITIONAL NEWS ITEMS:

Dr. David R. Allman, past President of American Medical Association, proposes a national "Jobs for the Aged Campaign" at a conference of health of aged in Boston.

New York Labor Unions are considering establishing their own hospitals and a medical insurance system to compete with the Blue Cross and Blue Shield.

ADDITIONAL ITEM:

Maricopa County Medical Society and its auxiliary are to be addressed by Dr. Dermont Melick, President of Arizona Medical Association, on the implications of the Forand Bill. Dr. Melick will also participate in a panel discussion of this problem and the problem of the aging with the other members of the American Medical Association at a special meeting to be held by the Maricopa County Medical Association on November 5th."

It was moved, seconded, and unanimously carried, that we accept the report as submitted.

Cancer

DOCTOR LEONARD: "I have received a letter from the Executive Director of the Cancer Society at the request of Hermann S. Rhu, M.D., of Tucson, that the Professional Committee conisder and recommend to the Executive Board approval of the statistical survey, which was instituted by the American Cancer Society to cover a total of fifty thousand families in the United States. It will cover five thousand families in the State of Arizona, done on a voluntary basis under direct command through the American Cancer Society, by which over a ten year period these various families will be reported to the American Cancer Society, Division of Statistics. These are confidential reports. It does not involve a doctor's time nor effort except where a death occurs, in which event, the doctor will be requested to fill in a card, with the cause of death or a copy of the death certificate could be made. The statistical analysis of these fifty thousand families over a period of ten years will be obtained in an effort to track down many factors on environmental factors in cancer, etc. This has been passed and approved by the American Medical Association as a worthwhile project; and, several states, I don't know the exact number, have approved it through their councils. It has been requested by Doctor Rhu, through James Bunker, Executive Director of the Cancer Society, that I request this approval from this Committee."

It was moved, seconded, and unanimously carried that the Professional Committee recommend to the Board of Directors that the Arizona Medical Association, through them, approve this survey as it is being effected through the American Cancer Society's national office through local volunteers.

Doctor Leonard reviewed the Tobacco and Health Journal of the Tobacco Institute, Inc., together with its editorial policies and objectives, decidedly favorable to the tobacco industry, for the information of the Professional Committee. It was suggested that should such policies and objectives become completely objectionable, we may wish to bring it to their attention.

Civil Defense and Safety

No report.

Crippled Children

Doctor Taber reported on the status of the survey of the crippled children's facilities in the State of Arizona.

It was directed that the Subcommittee continue its investigations in the field of crippled children's services, particularly as regards the Children's Colony and its lack of space and services to cover all of the problems in this field. It was further suggested that the Committee urge the Legislative Committee to direct its attention to needs dealing with the Children's Colony on the state legislative level.

General Medicine

Doctor Farness submitted the following report on matters dealing with poison control: A meeting on Poison Control was held October 26, 1959, at the College of Pharmacy, University of Arizona, Tucson.

It was agreed to adopt new report forms as recommended by the National Clearing House for Poison Control Centers.

2. Five additional Poison Control Treatment Centers will be activated in 1960 in the localities of Parker, Mesa, Nogales, Wickenburg, and the Miami-Globe area.

3. Discussion in regard to the use of Ipecac as an emetic instead of gastric lavage in cases of poison ingestion resulted in the feeling that there was insufficient evidence at present to warrant a recomendation by the Poison Control Information Center on the use of Ipecac.

4. It is felt that the Arizona Poison Control Program should be represented at the Annual Meeting of the Association of Poison Control Centers, preferably by a member of the College of Pharmacy faculty. As travel allowances are limited, it will not be possible for a faculty member to attend. Discussion on ways and means of obtaining funds for this purpose did not produce any concrete results.

5. Discussion on funds led to the subject of publicity for the program in general. Many ideas were forthcoming such as short presentations at County Society meetings throughout the state, talks by doctors to various groups such as service clubs, PTA, etc. The College of Pharmacy is anxious to help anyone who wishes to give a talk on Poisoning Control, with pamphlets, statistics, and a film entitled, "One Day's Poison," which may be obtained from the Department of Health in Phoenix, or the Visual Aids Department of the University of Arizona.

6. It was recommended that the pharmacists be urged to use safety cap bottles on all prescriptions they dispense. If practicing physicians will request safety cap bottles on all prescriptions they write, the pharmacists will become more aware of the necessity of such precaution and will co-operate in this endeavor.

Doctor Farness further reported on receipt of a directive from the Board of Directors through William B. Steen, M. D., (Tucson), regarding a communique from William Ure, M. D., pertaining to the fact that financial assistance for single individuals with tuberculosis on home care are not entitled to any assistance under the Tuberculosis Control Act, in accordance with an opinion rendered by the Attorney General. This matter has been referred back to the Arizona Tuberculosis and Health Association for further consideration.

Hospital and Nursing Problems

Doctor Melick reported on his activities before the Arizona State Nurses Association for the information of the Committee, urging that all members of this Association make it a point to contact the nurses of Arizona in their respective areas, carrying to them the many hidden, adverse implications of the Forand issue and seeking their support in prevention of passage of this measure.

It was further suggested that this matter be directed, through Doctor Kinkade, to the attention of Francis J. Bean, M.D., Chairman of the Subcommittee on Nursing of the Professional Liaison Committee, advising there is apparently a definite need for liaison between the doctors of medicine and the nurses of Arizona.

Maternal and Child Health

Doctor Johns gave the following report on Maternal and Child Health:

As you remember in May of 1959, the Arizona Medical Association House of Delegates passed a resolution calling for the approval of agents other than silver nitrate for use in prevention of gonorrheal ophthalmitis. The Graham County Medical Society has written letters requesting that this resolution be followed, as has Yavapai County Medical Society, and Dr. William Davis of Tucson. However, in discussion with the State Health Department, the representatives from Pinal County Pediatric Society, the Maricopa County Pediatric Society and the Arizona Pediatric Society, plus the recommendations of the American Academy of Pediatrics Committee, on fetus and newborn, which I list below; all these organizations prefer to continue with the present rules and regulations. I, therefore, recommend that the Board of Directors take no action, as requested, in this resolution.

Conclusions of the committee on fetus and newborn of the American Academy of Pediatrics are as follows:

(1) Gonorrheal ophthalmitis still constitutes a definite hazard to the newborn infant.

(2) Silver nitrate has amply demonstrated its effectiveness as prophylactic of gonorrheal ophthalmia.

(3) The occurrence of non-specific conjunctivitis does not, of itself, constitute adequate reason for change.

(4) The routine use of antibiotics may introduce further problems referrable to control of infections of the newborn.

It was moved by Doctor Johns, seconded by Doctor Kimball, and unanimously carried that this Committee recommend that the Board of Directors take no action, as requested in this resolution presented before the House of Delegates for preventive treatment in the eyes of the newborn.

Doctor Johns further reported that the problem of distribution of polio vaccine through labor groups has been apparently resolved through the co-operation of pharmaceutical manufacturers of the vaccine.

Mental Diseases

Doctor Gregory reported that he had received nothing further from the Western Interstate Commission for Higher Education regarding its Post-Graduate Clinical Psychiatry Regional Project for non-psychiatric physicians; although, it has been rumored that Phoenix has been selected as one of the sites for conducting the program.

Rehabilitation

Doctor Fife reported on the status of a survey undertaken among the component county medical societies as recommended in the American Medical Association's "Medicine's Back to Work Plan."

It was suggested that a copy of American Medical Association's brochure entitled, "Medical Guide to Phyiscians for Determining Fitness to Drive a Motor Vehicle," be obtained and forwarded to every member of the Association.

Venereal Diseases

At a meeting of the Board of Directors of this Association, held October 11, 1959, it was commented that in the light of recently expressed medical opinion, the pre-marital serological examination law be reviewed and comments or recommendations of any indicated changes should be directed to the Board for its further attention.

It was directed that this item be placed on the agenda for the next meeting of the Committee allowing Doctor Stolfa ample opportunity to delve into the problem and make definite recommendations.

Lorel A. Stapley, M.D.
Secretary
by Robert Carpenter
Executive Secretary

PROFESSIONAL LIAISON COMMITTEE

SUBCOMMITTEE ORGANIZATION

Allied Professions — Robert H. Cummings, M.D., Chairman. Membership: Doctors George Fraser (Tucson); Reed D. Shupe (Phoenix); Noel G. Smith (Phoenix); and Marcus W. Westervelt (Tempe).

Arizona AMEF — Harold W. Kohl, M.D., Chairman. Membership: Doctors Guy B. Atonna (Douglas); Delmer J. Heim (Tucson); Joseph P. McNally (Prescott); and Harold J. Rowe (Tucson).

Association of Physicians and Surgeons — Lavern D. Sprague, M.D., Chairman. Membership: Doctors Walter Brazie (Kingman); Allan B. Carter (Tucson); Walter V. Edwards (Phoenix); Oscar W. Fiske (Ajo); and James T. O'Neil (Casa Grande).

Careers — Zenas B. Noon, M.D., Chairman.

Governmental Medical Staffs — William G. Payne, M.D., Chairman. Members: Doctors Ian M. Chesser (Tucson); Albert G. Wagner (Phoenix); Marcus W. Westervelt (Tempe); and MacDonald Wood (Phoenix).

Nurses — Francis J. Bean, M.D., Chairman. Members: Doctors Melvin L. Kent (Mesa); Frederick A. Knight (Safford); Bertram L. Snyder (Phoenix); Eleanor A. Waskow (Phoenix); and Roy O. Young (Flagstaff).

Public Health — Ben P. Frissell, M.D., Chairman. Members: Doctors Walter Brazie (Kingman); Frederick W. Knight (Safford); E. Henry Running (Phoenix); Hugh H. Smith (Tucson); and Roy O. Young (Flagstaff).

Schools — Noel G. Smith, M.D., Chairman. Members: Doctors Stanford F. Farnsworth (Phoenix); Fred L. Goff (Douglas); E. Henry Running (Phoenix); James B. Wenzel (Flagstaff). Note: Jack H. Demlow, M.D. (Tucson) declined appointment to the Sub-committee on Schools.

Woman's Auxiliary — Robert E. Hastings, M.D., Chairman. Members: Doctors James E. Brady, Jr. (Tucson); Philip E. Dew (Tucson); Walton C. Finn (Tucson); Frederick J. Lesemann (Tucson); and Harry E. Thompson (Tucson). Note: Doctors Dennis Bernstein (Tucson); David S. Forsyth (Tucson); and Louis E. Young (Tucson) have not accepted nor declined appointment to the Subcommittee on Womans' Auxiliary to date.

General

Considerable discussion ensued in review of the scope of activity and responsibility of each subcommittee. In the light of the recent directive of the Board of Directors, each such subcommittee will function as a separate body, record its own proceedings through appointment of a secretary within its membership, and forward its reports and recommendations to the parent body, the Professional Liaison Committee. The chairman shall plan and develop an active program which shall be constructive, protective and informative. If necessary, the Central Office will assist in the call of the meeting.

Actions of the Professional Liaison Committee will be transmitted to the Board of Directors for its consideration and final determination.

SUBCOMMITTEE REPORTS

Careers

Doctor Melick outlined his views and objectives in the creation of this subcommittee of which Doctor Noon has been appointed chairman. Considerable time was expended in review of the most effective approach to be pursued in the selection of the membership to comprise this subcommittee keeping in mind fields of practice and geographic location as all areas in the state are equally concerned and interested. Each county was reviewed and many recommendations were presented. Doctor Melick was requested to give consideration to each and submit his recommendations to Doctor Noon for further review and approval, appointments to be consummated at the earliest possible time to enable further development of this activity.

Doctor Melick reviewed the program of the TST group (Tomorrows Scientists and Technicians) which on the surface appears to have much merit. It was determined that Doctor Melick would further investigate this program advising the Committee on its operations.

Governmental Medical Staffs

It is recognized that activity of this subcommittee on the most part will generate out of problems arising from time to time within governmental medical staffs and possibly affecting medical practice without such agency areas. It will be required of the subcommittee to be alert and available for consultation whenever indicated.

Nurses

Doctor Melick assured this subcommittee of much activity in the months ahead to develop better liaison and understanding between the registered nurse and the doctor of medicine in an endeavor to restore the confidence and respect each had for one another in the past. Review of his recent experiences while attending the annual meeting of the Arizona Nurses Association convened in Yuma, especially as pertains to the Forand Bill H.R. 4700, was recited.

Doctor Bean recommended the Committee accept the invitation of the Arizona League of Nursing to participate in the activity of its newly appointed Maternal and Child Health Council. It was suggested that inasmuch as Doctor Young has as yet to be given a specific assignment, that he be officially designated its representative and serve in such capacity which was unanimously concurred in.

Public Health

Doctor Frissell reported that no formal meeting of this Committee has been held to date. There have been several communications by letter between the various members of the committee, several telephone calls and likewise several personal visits with individual members.

The question of the controversy over the State Public Health Department's multiphasic screening program has been considered. The Committee does not feel that this program constitutes an infringement on the private practice of medicine, which was apparently one of the prime controversial phases of the problem. There is some question in the minds of some of the Committee members as to whether this type of program represents the most efficient Public Health effort. It is our belief that this fact is a strong argument in the favor of building a stronger State Health Department which does not have to lean too heavily on federal appropriations, as is the case at the present time. The above program is one sponsored and financed by U. S. Public Health grant and not one financed out of State Public Health appropriations.

Considerable research and exploration has been made by the Chairman of this Committee into the problem of trying to assist and improve our State Health Department. From many different areas we have been reminded forcefully of the negligence of the doctors of the state in not supporting an adequate Public Health program. This is the feeling of legislators, lay people and other professional people throughout the state. This problem would appear to resolve itself into two phases: one, a stopgap type of program to try to calm the seas at the time of the next legislative session in January. Beyond that there is a long term program necessary to bring about an awareness of the Public Health needs of the state to the citizenry at large, particularly through many of its civic organizations such as PTA, Federated Womens' Clubs, various men's civic clubs, etc., and of course the long range aim of trying to impress the majority of the legislators of this state as to these needs.

And last, but not least, the very definite need for an appreciation on the part of the rank and file of the private practitioners of medicine in the state of their responsibility in this field of health endeavor.

Doctor Frissell outlined for the Committee, two resolutions that were presented before the House of Delegates of the Association having to do with Public Health Department procedures; the determination of the Cochise and Graham County Medical Societies declining to complete multiphasic program of the Arizona State Department of Health including diabetes detection and requesting only the section of the program covering communicable diseases; and the problems of the State Health Department together with its anticipated plans for future development of services, indicating that the Arizona Medical Association must become interested in and take an active part in this program.

It was determined that the Subcommittee should meet with the Cochise and Graham County Medical Societies seeking their understanding, cooperation and aid in the proper handling of this problem.

Schools

The general problem to be met by our committee was thoroughly discussed, and a plan of approach to the state-wide problem of school health was outlined. The consensus was that a syllabus of a School Health Program should be drawn up to fit the needs in Arizona. This should then be presented to the Professional Liaison Committee for their consideration, and eventually considered by the House of Delegates at the Annual Meeting for approval and aid in establishing such a syllabus in the schools throughout the state.

It was felt that the preliminary outline of our program should contain the following:

1. General principles of operation of a school health program.

2. Plan for establishment of adequate preschool physical examinations.

3. Plan for adequate interval screening exams, and arrange for any corrective measures through physical education programs, etc.

4. Evolve a suitable method of providing proper immunization to all school children (initial and booster) throughout the school years through their own family physicians or through established clinics for indigents, rather than by mass inoculation programs.

5. Provide standardized school health records throughout the state.

6. Urge the appointment of school physicians for all school districts throughout the state.

7. Provide for coordinated approach to all school health problems as they may arise.

8. And finally, to integrate this program when once finally approved with school administrations, state, and local health units, the school physicians, and the local medical societies.

We felt that our ultimate goal should be the presentation at the Annual Meeting of the Arizona Medical Association, Inc., of a well thought-out program of School Health Administration which we would like to urge the Association to approve at that time.

We are well aware that formulating a plan is the simplest part of our problem, and that once the plan is approved by the State Association, that the real job of selling such a program to the school administrators throughout the State begins.

Realizing the broad scope of our problem individual assignment was made to each of the committee members for special study and recommendations.

We would appreciate the Liaison Committee's comments on our plan of approach and would like their approval of same.

Doctor Smith was commended by the Committee for his Subcommittee's work on the part of the problems of School Health in the State of Arizona.

LOREL A. STAPLEY, M.D.
Secretary

By ROBERT CARPENTER
Executive Secretary

BOARD OF MEDICAL EXAMINERS STATE OF ARIZONA

The Board of Medical Examiners of the State of Arizona at a regular meeting held Saturday, October 17, 1959, issued certificates to practice medicine and surgery in this state to the following doctors of medicine:

Anderson, Robert D. (GP), 753 East McDowell Rd., Phoenix, Arizona

Brown, Richard E. (Pd), 1150 North Country Club Drive, Mesa, Arizona

Capp, Charles D. (GP), 2340 Albro Boulevard, Tucson, Arizona

Chapman, John E. (GP), University of Arizona – Dept. of Student Medicine, Tucson, Arizona

Collopy, Bernard J. (GP), Box 342, Miami, Ariz.

Cuvillier, Jr., Louis M. (GM-S), 1407 Woodside Parkway, Silver Spring, Maryland

Esquivel, Raymundo J. (Anes), 2806 South 7th Avenue, Tucson, Arizona

Forrer, Graydon R. (P), 307 East Court, Flint, Michigan

Fowkes, Jr., William C. (GP), Miami Inspiration Clinic, Miami, Arizona

Gerster, Carolyn T. (I), 3131 North 7th Avenue, Phoenix, Arizona

Hauber, Frank D. (GS), 608-610 South Union Avenue, Havre de Grace, Maryland

Ireneus, Jr., Carl B. (GS), 224 South Michigan Avenue, Chicago, Illinois

Johnson, Ronald G. (GP), 1000 E. Minnehaha Parkway, Minneapolis, Minnesota

Kerr, Margaret L. (Anes), 934 E. Stella Lane, Phoenix, Arizona

Levison, Charles L. (GP), PHS Indian Hospital, Sacaton, Arizona

Liccione, William J. (I), Pima County General Hospital, Tucson, Arizona

Lueker, Richard D. (GP), San Manuel Copper Co. Hospital, San Manuel, Arizona

McGaughey, Clark G. (GP), 34 East Stetson Drive, Scottsdale, Arizona

Marks, Jack A. (P), 2500 East Van Buren Street, Phoenix, Arizona

Robertson, Leo E. (GS), 719 Sheridan Avenue, Cody, Wyoming

Saab, Joseph R. (GP), 585 Ridge Road, Lackawanna, New York

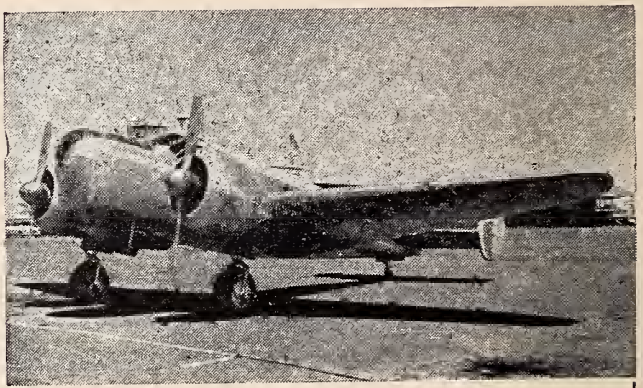
Sandor, Feszty Katalin T. (R), 81 E. Monte Vista Road, Phoenix, Arizona

Sharkey, Paul C. (NS), 1715 East Amelia, Phoenix, Arizona

Smith, Merle E. (PH), Coconino County Health Dept., Flagstaff, Arizona

Sokoloff, Burton Z. (GP), U.S. Army Dispensory, Preventive Medicine Division, Fort Bliss, Texas

Zeno, Ross R. (GS-GP), 326 South Main Street, Akron, Ohio



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STRAINS MORE
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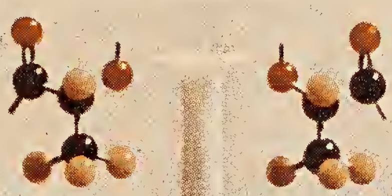

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The antibiotic effect of the clinically available mixture, SYNCILLIN, is greater than that of either of its two component isomers alone against many important pathogens, including some penicillin-resistant staphylococci. This phenomenon has been described as *Isomeric Complementarity.*

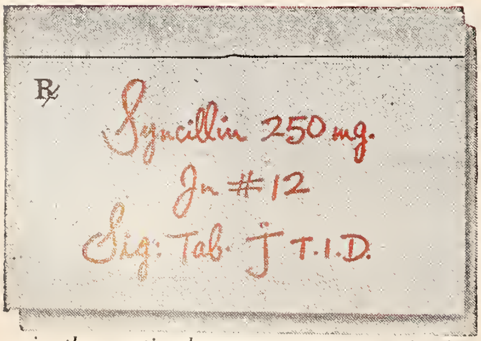
Significance of higher blood levels with SYNCILLIN

Higher blood levels may be of value with organisms of only moderate penicillin sensitivity where doubling the blood concentration may be essential for effective bactericidal action. In addition, these higher levels may be necessary where there is infection in areas with a poor blood supply.[6] Under these circumstances a higher blood concentration may provide the increased diffusion pressure required to deliver adequate amounts to the tissue. Also, antibiotic activity of SYNCILLIN is directly proportional to oral dosage. Increasing the dosage may, therefore, enhance the drug's effectiveness in certain cases.

Efficacy of SYNCILLIN against staphylococci and other resistant organisms

Studies have shown that SYNCILLIN is effective *in vitro* against 60 to 75% of hospital "staph" strains, while penicillin G and penicillin V are now effective against only 30 to 50%.[1, 2] Therefore, if clinical judgment indicates the use of penicillin, SYNCILLIN would be expected to be the most effective. However, since some strains are still resistant to SYNCILLIN as well as to the other penicillins, cultures and sensitivity tests should be performed where indicated by clinical judgment.

There have recently been reports of decreased efficacy of penicillin in streptococcal[3] and gonococcal[4, 5] infections. The emergence of penicillin-resistant gonococci appears to be associated with an increase in the incidence of gonorrhea all over the world. When a less sensitive strain is encountered the higher blood levels produced by SYNCILLIN may be most helpful.



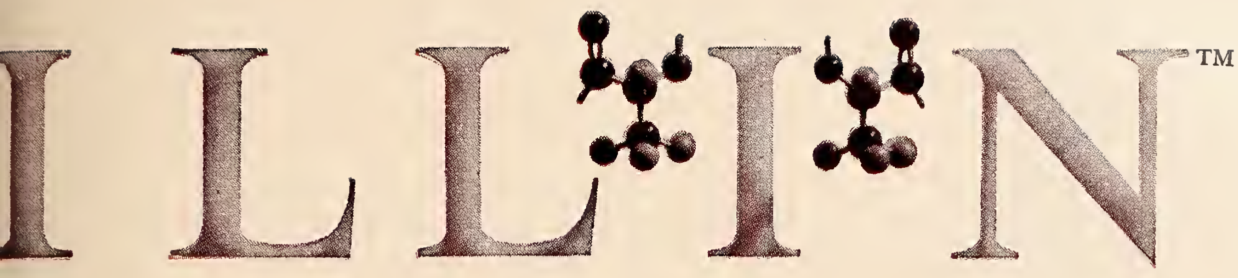
℞

Syncillin 250 mg.

Jn #12

Sig: Tab. ī T.I.D.

major therapeutic advantages accompany molecular asymmetry



Relation of intermittent high blood levels of SYNCILLIN to antibacterial efficacy

SYNCILLIN, like all clinically available penicillins, is bactericidal. Periodic high blood concentrations are sufficient to permit complete eradication of sensitive pathogens. Continuous high blood levels are not required with SYNCILLIN. According to Eagle,[7] "Soon after penicillin attains effective concentrations, the bacteria cease multiplying; and the bacteriostatic effect persists for a number of hours after penicillin has fallen to concentrations that are wholly ineffective....The therapeutic significance of this postpenicillin recovery period is enhanced by the fact that the recovering bacteria, damaged but not killed by the previous exposure to penicillin, are abnormally susceptible to the host defenses. In consequence, the bactericidal process *in vivo* continues for many hours after the drug itself has fallen to ineffective concentrations."

Reduced rate of inactivation of SYNCILLIN by staph penicillinase

Bacterial resistance to penicillin has been attributed to the action of penicillin-inactivating enzymes produced by the invading organisms. SYNCILLIN is less affected by staphylococcal penicillinase than either of its component isomers. Further, SYNCILLIN is shown to be less inactivated by this enzyme than penicillin V and penicillin G. Penicillinase from *B. cereus* likewise inactivates SYNCILLIN less rapidly than penicillin V and G. But this would not impede the therapeutic use of this penicillinase in allergic reactions. This is because the massive dosage with which this enzyme is administered would effectively destroy SYNCILLIN in the body.

References: 1. Wright, W. W.: Microbiology Report to Bristol Laboratories Inc. 2. Kligman, A.; Morigi, E. M. E.; Wheatley, W. B., and Albright, H.: Paper presented at the Seventh Antibiotic Symposium, November 4-6, Washington, D.C. 3. Editorial: New England J. Med. **261**:305 (Aug. 6) 1959. 4. King, A.: Lancet **1**:651 (March 29) 1958. 5. Epstein, E.: J.A.M.A. **169**:1055 (March 7) 1959. 6. Kass, E. H.: Am. J. Med. **18**:764 (May) 1955. 7. Eagle, H.: J. Bact. **58**:475, 1949.

Indications: SYNCILLIN is recommended in the treatment of infections caused by pneumococci, streptococci, gonococci, corynebacteria, and penicillin-sensitive staphylococci. In addition, SYNCILLIN is effective against certain strains of staphylococci resistant to other penicillins. SYNCILLIN, like other oral penicillins, is not recommended at the present time in deep-seated or chronic infections, subacute bacterial endocarditis, meningitis, or syphilis.

Dosage: 125 mg. or 250 mg. three times daily, depending on the severity of infection. Larger doses (e.g., 500 mg. t.i.d.) may be used for more severe infections. SYNCILLIN may be administered without regard to meals. Beta hemolytic streptococcal infections should be treated with SYNCILLIN for at least ten days.

Precautions: At the present time it is not possible to draw definite conclusions regarding the incidence of allergenicity to SYNCILLIN or its cross-allergenicity with natural penicillins. *Therefore, the usual precautions for oral penicillin therapy should always be observed.* Patients with histories of asthma, hay fever, urticaria, or previous reactions to penicillin should be watched with special care. Administration of oral penicillin, in rare instances, may provoke acute anaphylaxis, particularly in penicillin-sensitive individuals.
Diarrhea has been reported occasionally following heavy dosage. If this occurs, lengthen the interval between dosages.
If superinfection occurs during therapy, appropriate measures should be taken. Since some strains of staphylococci are resistant to SYNCILLIN as well as to other penicillins, cultures and sensitivity tests should be performed where indicated by clinical judgment. As is true with all antibiotics, clinical response does not always correlate with laboratory bacterial sensitivity reports.

Supply: 125 and 250 mg. tablets, bottles of 25 and 100. 125 mg. powder for oral solution, 60 ml. vials.

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You will find Dartal outstandingly beneficial in management of the anxiety-tension states so frequent in hypertensive or menopausal patients. And Dartal is particularly useful in the treatment of anxiety associated with cardiovascular or gastrointestinal disease, or the tension experienced by the obese patient on restricted diet. You can expect consistent results with Dartal in general office practice.

with low dosage: Only one 2, 5 or 10 mg. tablet t.i.d. *with relative safety:* Evidence indicates Dartal is not icterogenic.

Clinical reports on Dartal: 1. Edisen, C. B., and Samuels, A. S.: A.M.A. Arch. Neurol. & Psychiat. *80*:481 (Oct.) 1958. 2. Ferrand, P. T.: Minnesota Med. *41*:853 (Dec.) 1958. 3. Mathews, F. P.: Am. J. Psychiat. *114*:1034 (May) 1958.

SEARLE

Topics of Current Medical Intrest

SUMMARY OF THE PROCEEDINGS OF THE SCIENTIFIC SESSION AT THE ANNUAL MEETING, OCTOBER 26-27, 1959

The Scientific Session at the Society's 1959 Annual Meeting was devoted to an evaluation of early diagnosis of cancer. A symposium brought together some 40 of the nation's leading family physicians, cancer specialists and scientists who presented papers and participated in panel discussions before an audience of physicians from all other the United States concerned with this problem.

There was no question that early detection is still the best weapon in the fight against cancer. The feeling was that current methods of treatment can be most effective in early, localized cancers, and that the greatst immediate progress has to come in the fields of detection and early treatment.

The first session took up the discussion of the economics of cancer detection. Dr. Leona Baumgartner, New York City Commissioner of Health, reported that it cost the city about $3,000 per case to find a cancer by routine examination of apparently well persons. However, she reported that it cost only $3.00 for the uterine cell examination in detection of cancer of the womb. Dr. Baumgartner feels that it might be possible to solve the high cost of case-finding by developing simple laboratory tests, like the "Pap" smear, which could be performed on persons known to be high-risk as regards certain types of cancers.

The second session examined the value of periodic examinations in cancer detection. Reports from Minneapolis, Baltimore, Bethesda and other areas revealed how much more curable cancer is in its early stages than in the advanced stages.

Capt. Robert B. Brown, Chief of Surgery at the U. S. Naval Hospital in Bethesda, reported and discussed 26 cases of lung cancer which were picked up in annual checkups of military personnel. He reported a five year survival rate of about 20 per cent as compared with the national average of survival in lung cancer of only about five per cent.

Doctors from the University of Minnesota Hospitals reported that their patients whose gastrointestinal cancers were found through regular checkups enjoyed a 5-year survival rate two or three times better than the national average for gastrointestinal cancer. It was also found that patients whose cancers were detected before the appearance of symptoms fared better than symptomatic patients. Over 62 per cent of their patients with gastointestinal cancer who were in the asymptomatic group survived at least 5 years.

Dr. Edward F. Lewison of Johns Hopkins University School of Medicine reported that in their series of breast cancer cases the 5-year survival rate among women whose disease had not spread beyond the breast was twice that of the women whose disease had already spread.

Reports presented on the value of periodic examination for cancers of the head and neck and of the cervix emphasized the importance of early cancer detection.

The third session dealt with precancerous lesions and their treatment. A prediction that the current survival rate of 33 per cent could be increased to 50 per cent with early detection and treatment came from Dr. R. Lee Clark of the M. D. Anderson Hospital in Houston. However, Dr. Russell S. Boles of Philadelphia and Dr. Fred W. Stewart of New York pointed to many unknowns and dangers in the field of precancerous lesions. It was Dr. Boles' contention that too much surgery was done to remove precancerous lesions which in fact rarely became malignant. He called for a great expansion of research devoted to the study of man in his native environment as the most significant way of finding the causes of cancer. Dr. Stewart warned that the term "precancerous" is very much abused and he emphasized the need for establishing the validity of precancerousness before calling a suspicious lesion "precancerous."

Dr. Thomas J. Anglem of Boston and Dr. John C. McClintock of Albany reported that radiation of the thyroid of infants and children is likely to be a cause for the later development of thyroid cancer.

Dr. E. Cuyler Hammond, the Society's Statistical Research Director, reinforced the earlier asserted need for case-finding among individuals with high cancer risk. He pointed out that there are numerically not enough doctors in the United States to perform routine examination on all adults at frequent intervals. Dr. Hammond said that results of the Society's Cancer Prevention Study inaugurated this year might make it possible to identify selected high risk groups which would then become the specific focus of early cancer detection programs.

The final session was devoted to a discussion of treatment of early cancer. Dr. Jerome A. Urban, of Memorial Hospital, New York, commenting on 1,000 cases of primary breast cancer treated by radical mastectomy and x-radiation, reported that the 5-year survival rate rose to over 70 per cent for early cases in which the disease was not clinically apparent and was only 52 per cent in the group who already had clinically diagnosable lesions.

In sum, the symposium found need for improvement in two chief problem areas. In the first, more clinical knowledge is needed about relationship between a patient and his tumor, as well as about the biological nature of cancer itself; also, more definite answers are needed to the questions of what is early cancer and what is a precancerous lesion. The second problem is rooted in the area of case-finding. The need here is to find an easier and less expensive way to find cancers earlier.

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  (yet without overstimulation, insomnia or barbiturate hangover)

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Dosage: One tablet one-half to one hour before each meal.

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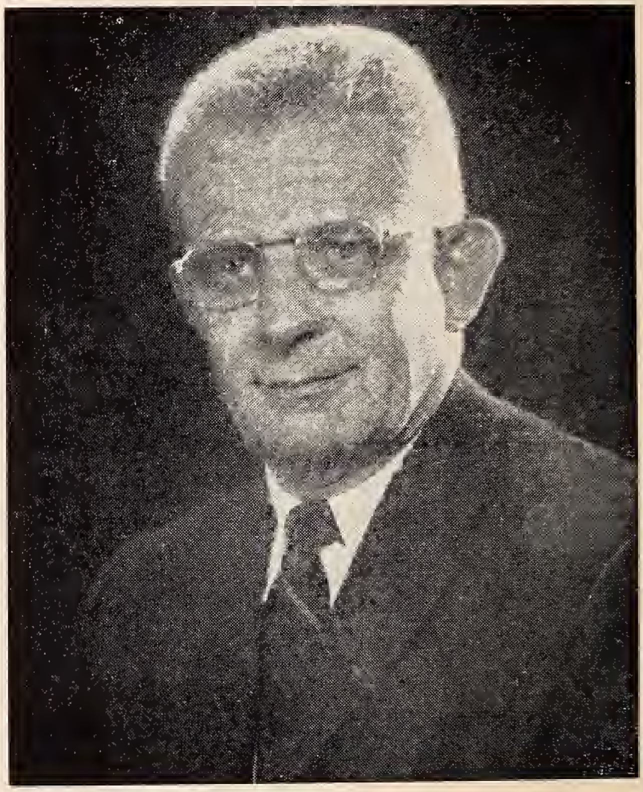
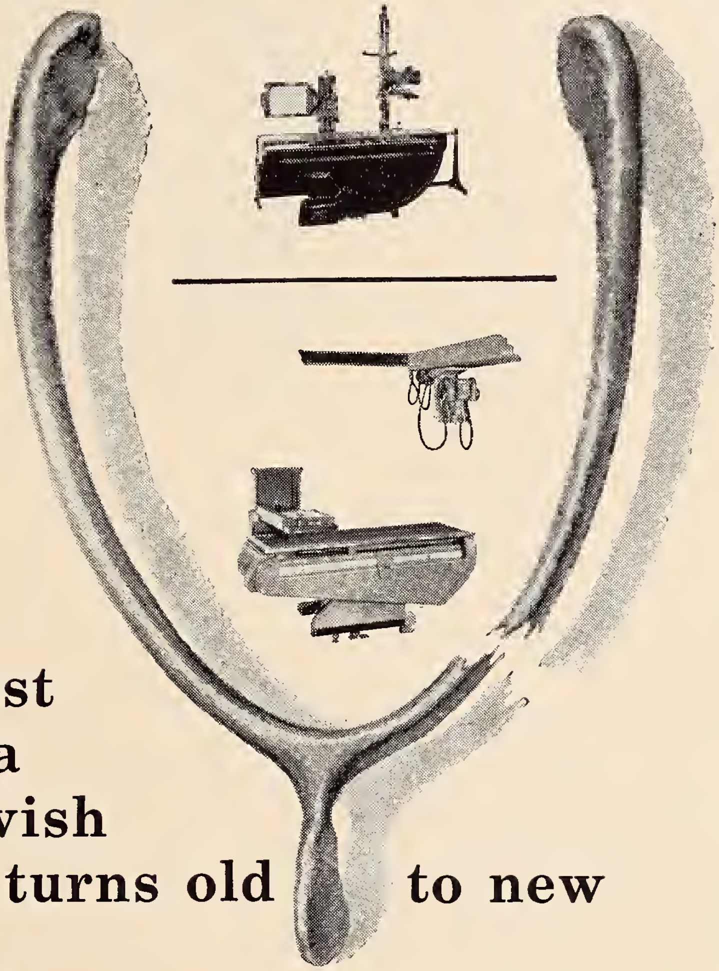
Dr. Arthur J. Present



Dr. Arthur J. Present, Tucson, was unanimously elected Chairman of the Board of Chancellors, The American College of Radiology, at the Chancellors' Fall meeting in Cincinnati. He succeeds Dr. Earl E. Barth, Chicago, Illinois, whose term as Chairman ends in February, 1960. Dr. Present assumed his office following the Febuary Mid-Winter meeting of the Chancellors in New Orleans, February 3 and 4, 1960.



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greater inhibitory action . . . lower intake per dose . . . DECLOMYCIN produces equivalent or greater clinical activity with less antibiotic because of two basic factors: (1) increased potency, and (2) longer retention.

broad-spectrum control in depth. Higher activity level enhances range of previous antibiotics. Some problem pathogens have been found more responsive. Strains of Pseudomonas, Proteus and *A. aerogenes* have proved sensitive to DECLOMYCIN.

sustained activity level. DECLOMYCIN maintains a more constant level of activity. Infection is quickly resolved.

24-48 hours extra activity . . . protection against relapse. Antimicrobial control is maintained after stopping dosage. Most other antibiotics dissipate rapidly on withdrawal.

REFERENCES:

1-11. Papers read at Seventh Symposium on Antibiotics, Washington, D. C., November 4-6, 1959.

12. Phillips, F. M.: DECLOMYCIN—Seventh Interim Report. Department of Clinical Investigation, Lederle Laboratories, Pearl River, N. Y., December 4, 1959.

CAPSULES, 150 mg., bottles of 16 and 100.
Dosage: average adult, 1 capsule four times daily.
PEDIATRIC DROPS, 60 mg./cc. in bottle of 10 cc. with calibrated dropper.
ORAL SUSPENSION, 75 mg./5 cc. tsp. in 2 oz. bottle.

new broad-spectrum

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DEMETHYLCHLORTETRACYCLINE LEDERLE

a masterpiece of antibiotic design

performance

genitourinary infection. Roberts, M. S.; Seneca, H., and Lattimer, J. K.,[1] New York, N. Y.–Ninety-one per cent of the Gram-positive and 27 per cent of the Gram-negative, among 66 organisms cultured from genitourinary infection, responded to DECLOMYCIN. Serum antibiotic activity was found three times greater than with tetracycline.

toleration. Boger, W. P., and Gavin, J. J.,[2] Norristown, Pennsylvania – Side effects with DECLOMYCIN were minimal. When dosage was 0.5 to 1 Gm. daily in divided doses, only two of 82 patients exhibited nausea.

activity level sustentation. Kunin, C. M.; Dornbush, A. C., and Finland, M.,[3] Boston, Massachusetts–Of the four tetracycline analogues, DECLOMYCIN Demethylchlortetracycline showed the longest sustained activity levels in the blood.

gonococcal infection. Marmell, M., and Prigot, A.,[4] New York, N. Y. – Of 63 cases of gonorrhea, 61 promptly responded after short courses of DECLOMYCIN. Therapeutic effect was found equal to that of intramuscular penicillin.

bronchopulmonary infection. Perry, D. M.; Hall, G. A., and Kirby, W. M. M.,[5] Seattle, Washington – Of 30 cases of acute bacterial pneumonia, all were afebrile following two to 10 days of treatment with DECLOMYCIN. Results were good in 21. . . . All of six patients with acute bronchitis responded promptly.

pediatric infection. Fujii, R.; Ichihashi, H.; Minamitani, M.; Konno, M., and Ishibashi, T.,[6] Tokyo, Japan – In 309 pediatric patients with various infections, DECLOMYCIN was effective in 75 per cent.

urogenital infection. Vineyard, J. P.; Hogan, J., and Sanford, J. P.,[7] Dallas, Texas – Clinical response in pyelonephritis correlated well with results of *in vitro* sensitivity tests, which showed some strains of *A. aerogenes*, Proteus and Pseudomonas more susceptible to DECLOMYCIN Demethylchlortetracycline than to its analogues.

pneumonia. Duke, C. J.; Katz, S., and Donohoe, R. F.,[8] Washington, D. C. – Results were satisfactory in all but two of 32 cases of acute bacterial pneumonia, of which only 11 were uncomplicated. No side effects were observed.

brucellosis. Chávez Max G.,[9] Mexico, D. F., Mexico – All of nine patients with *Br. melitensis* infection were afebrile after five days on DECLOMYCIN. Blood cultures were negative in all cases on the 20th day. Side effects were limited to slight temperature increases which abated in four days.

pustular dermatosis. Blau, S., and Kanof, N. B.,[10] New York, N. Y. – Results with DECLOMYCIN were excellent in both of two cases of impetigo, one of two cases of folliculitis, six of nine cases of furunculosis, all of three cases of acne rosacea and 26 of 45 cases of acne vulgaris. Overall, results were excellent or good in 85 per cent.

antibacterial spectrum. Finland, M.; Hirsch, H. A., and Kunin, C. M.,[11] Boston, Massachusetts – DECLOMYCIN Demethylchlortetracycline was found the most effective of the tetracycline analogues against two-thirds of 680 normally sensitive strains of 15 separate species.

the over-all picture. Combined results reported by 210 clinical investigators[12] – DECLOMYCIN produced a favorable response (cured or improved) in 87 per cent of 1,904 patients. Two-thirds of the patients received one capsule every six hours. Treatment was continued for as long as 180 days, but was between three and eight days in most. Side effects were seen in 9.9 per cent, but necessitated discontinuance of treatment in only 1.8 per cent.

LEDERLE LABORATORIES, a Division of AMERICAN CYANAMID COMPANY, Pearl River, New York Lederle

Future Medical Meetings and Postgraduate Education

Phoenix Surgical Society

Lecture – March 8, 1960 – 8:30 p.m. "Surgical Treatment of Duodenal Ulcer – Changing Concepts," Dr. Jack Farris, Professor of Surgery, UCLA. Mountain Shadows Resort, East Lincoln Drive, Scottsdale, Arizona.

American College of Chest Physicians

The Council on Postgraduate Medical Education of the American College of Chest Physicians of the 13th Annual Postgraduate Course on Diseases of the Chest at the Sheraton Hotel, Philadelphia, March 14-18, 1960.

The most recent advances in the diagnosis and treatment of heart and lung diseases, medical and surgical aspects, will be presented.

Tuition for this five-day course will be $100, including round table luncheon discussions.

Further information may be obtained by writing to the Executive Director, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

The Dallas Southern Clinical Society

The Twenty-Ninth Annual Spring Clinical Conference of The Dallas Southern Clinical Society is scheduled for March 21, 22, 23, 1960, with all meetings at the Statler Hilton.

The Southwestern Surgical Congress Twelfth Annual Meeting

The Southwestern Surgical Congress is meeting in Las Vegas, March 28, 29, 30 and 31, 1960. The Riviera Hotel will be headquarters.

The scientific program runs throughout the four days of the meeting and embraces five guest speakers presenting papers, as well as the organization. The guest presentations will cover General Surgery, Cancer, Vascular Surgery, Obstetrics-Gynecology and Hand Surgery, and the speakers are:

Dr. William P. Longmire, Jr., University of California Medical Center, Los Angeles.

Dr. Ian G. MacDonald, Los Angeles.

Dr. Rutherford S. Gilfillan, San Francisco.

Dr. Bernard Hanley, Los Angeles.

Dr. Walter C. Graham, Santa Barbara, California.

Members of the Southwestern Surgical Congress and members of the Armed Forces are not required to pay registration fees. Non-members are welcome but will be required to pay registration fee at the time of the meeting. Members of the Arizona Medical Association are invited.

For the meeting a fairly concentrated scientific program including the guest speakers is planned as well as excellent off-time entertainment.

Hawaii Medical Association

The 104th Annual meeting of the Hawaii Medical Association, Honolulu, May 12, 13, 14 and 15, 1960.

Third International Congress Of Physical Medicine

The Third International Congress of Physical Medicine will be held August 21-26, 1960 inclusive at The Mayflower, Washington, D. C.

The preliminary prospectus covering the international conference carries in detail information on registration, application to present a paper, a scientific exhibit, a scientific film, etc. A copy of this preliminary program may be had on request by writing: Dorothea C. Augustin, Executive Secretary, Third International Congress of Physical Medicine, 30 N. Michigan Avenue, Chicago 2, Illinois.

ONE OUT OF 20 MDs IN PRIVATE PRACTICE IS A WOMAN

8,000 Women MDs in Private Pratice in 1958.

What the Women MDs Do:

General Practitioners	57.2%
Pediatricians	15.0%
Psychiatrists and Neurologists	7.9%
Technical Specialists	7.2%
Internists	5.2%
Eye, Ear, Nose & Throat Specialists	4.1%
Obstetricians	3.4%

Proportionately More Women MDs Than Men are Located in the Nation's Small Towns.

(from New Medical Materia, Vol. 1, No. 10)

Shouldn't **KANTREX**® Injection* be kept in reserve for treating staph or gram-negative infections until other antibiotics have been tried first?

a No. Naturally, Kantrex Injection should not be used in mild or self-limited infections, but as Yow states, "it should not be withheld in moderately severe or severe infections."[1]

Q *What properties of Kantrex led Yow to draw this conclusion?*

Next page, please . . .

*Kanamy njection (Bristol)

Q *What properties of Kantrex led Yow to draw this conclusion?*

a The following[2]: (1) Kantrex Injection is bactericidal, not merely bacteriostatic; (2) it is absorbed rapidly after intramuscular injection; (3) it has proved successful in many types of staph and gram-negative infections resistant to other antibiotics; and (4) it is well tolerated when used judiciously.

Q *But if I use Kantrex Injection, won't that help make bacteria resistant to it?*

a Numerous investigators have reported that micro-organisms do not readily develop resistance to Kantrex in a clinical setting; and emergence of resistance to Kantrex has not been a practical problem.[3,4,5,6,7,8]

Q *How does the* in vitro *activity of Kantrex against staph compare with that of other antibiotics?*

a Griffith and Ostrander[9] tested 794 strains of staphylococci and found that 95.2% were sensitive to Kantrex. By contrast, only 15.5% of the same organisms were sensitive to penicillin, 33.5% to tetracycline, 52.4% to erythromycin, and 71.7% to chloramphenicol.

Q *What about the sensitivity of other pathogens to Kantrex?*

a Leming[10] recently summarized the *in vitro* activity of Kantrex against 4493 strains of various organisms isolated from hospital patients over a 7-month period. He reported that the following percentages of these clinical isolates were sensitive to Kantrex: *Proteus mirabilis*, 98%; *Proteus morganii*, 94%; *Proteus rettgeri*, 89%; *Proteus vulgaris*, 87%; *Paracolobactrum intermedium*, 96%; *Coli-aerogenes* group, 93%; *Streptococcus viridans*, 78%; *Salmonella* and *Shigella*, 92%.

Q *What do these figures mean clinically?*

a A great deal. As Yow stated in recent reviews of Kantrex Injection, it "appears to be one of the most effective anti-staphylococcal antibiotics available today."[1,2] Kantrex Injection is also effective in the treatment of infections caused by "most strains of *E. coli*, *Proteus sp.*, the *Klebsiella pneumoniae-Aerobacter aerogenes* group, and many strains of *Pseudomonas aeruginosa* resistant to other antibiotics."[2] In another report, Kantrex Injection was placed at the head of the list of drugs "with the most chance of success" against *A. aerogenes* urinary tract infections.[11]

Q *Have these findings about Kantrex therapy been substantiated by other investigators?*

a Yes, indeed. Finegold,[12] who reviewed the clinical findings of 64 investigators, reported that infections which "usually responded" to Kantrex included: staph infections (including staph enteritis), *E. coli* infections (including *E. coli* gastroenteritis), atypical acid-fast bacillus infections, *Acrobacter-Klebsiella* infections, paracolon infections, *Alcaligenes* infections, *Shigella* dysentery, *Salmonella* enteritis, anthrax, amebiasis, and *E. histolytica* carrier state. Among the infections that "sometimes responded" were listed: pneumococcal infections, group A *beta*-hemolytic streptococcic infections, *Proteus* infections, gonorrhea, and paratyphoid fever.

Q *That's an impressive list. What didn't respond?*

a According to Finegold's tabulation, treatment failures were "usually" encountered in brucellosis, *Pseudomonas* infections, typhoid fever, mycotic infections and anaerobic infections.[12]

Q *How long do I have to give Kantrex Injection before I know whether it works or not?*

a Generally 2 or 3 days or less. Usually the effectiveness of Kantrex Injection can be determined in 24 to 36 hours. Rutenburg et al. reported that "the rapidity with which bacteria are killed by this agent is reflected by the promptness of the clinical response."[13]

MORE QUESTIONS on the clinical use of KANTREX®

Q *How long should I continue to administer* KANTREX?

a If definite clinical response does not occur within 5 days, KANTREX therapy should be stopped and the antibiotic sensitivity of the invading organism rechecked.

Q *What is the hazard of a patient developing hearing loss during* KANTREX *therapy?*

a In well hydrated patients with normal kidney function receiving KANTREX at the recommended dosage schedule, the hazard of ototoxic reactions is negligible. In patients with impaired kidney function, the risk of ototoxic reactions is sharply increased, and in such cases the dosage should be reduced. Finegold has stated: "Toxicity inherent in the drug can be avoided or minimized with careful management."[12]

Q *Why should renal impairment influence the dosage?*

a Because renal impairment delays the excretion of KANTREX Injection and causes an excessive accumulation in blood and tissues. Such excessive concentrations increase the risk of ototoxicity. Dosage recommendations emphasize that adequate serum levels can be achieved in such patients with a fraction of the dose suggested for patients with normal kidney function.

Q *Have you had any reports of blood dyscrasias?*

a None whatever.

Q *You mean, then, that a physician who uses* KANTREX *Injection judiciously should find it not only effective but also well tolerated?*

a Effective? Certainly, against almost all staph or "gram-negatives," even though they may be resistant to other antibiotics. Well tolerated? Yes, when given in recommended dosage. The physician can well agree with Yow, that while KANTREX Injection should not be used in mild or self-limited infections, "it should not be withheld in moderately severe or severe infections."[1] That, indeed, is the time to give it—first!

KANTREX CAPSULES

for local gastrointestinal therapy...
not for systemic infections

Q *If* KANTREX *is not absorbed from the G.I. tract, what are the capsules used for?*

a Preoperative bowel sterilization, and local treatment of intestinal infections due to kanamycin-sensitive organisms.

Q *What types of intestinal infections, for instance?*

a Acute and chronic shigellosis,[14] acute and chronic salmonellosis,[4,14,15,16] amebiasis,[17] bacillary dysentery,[18] infantile diarrhea,[16,18] gastroenteritis,[19] and staphylococcal enterocolitis.[2]

Q *For preoperative bowel sterilization, why should I switch from neomycin to* KANTREX *Capsules?*

a Because KANTREX has been rated superior to neomycin for this purpose.[20,21,22] Out of 30 intestinal antiseptics studied, KANTREX was designated "the only single agent classified as a preferred drug."[21] KANTREX "consistently eliminated all aerobic bacteria within 72 hours (and often within 24 to 36 hours) if a purgative was given with the first dose to expedite passage through the gastrointestinal tract."[12]

Q *Is that all the advantage* KANTREX *has over neomycin for preoperative bowel sterilization?*

a Not at all, there are several others. Diarrhea, nausea and vomiting have not been observed with KANTREX, though they occur frequently with neomycin; yeasts do not proliferate, in contrast to rapid growth with neomycin; and clostridia are well controlled with KANTREX, and not controlled with neomycin.[20,21,22]

KANTREX

INJECTION KANAMYCIN SULFATE INJECTION

INDICATIONS

Infections due to kanamycin sensitive organisms [illegible] urinary infections, skin, soft tissue and [illegible] septicemia and bacteremia, osteomyelitis and [illegible]

DOSAGE: INTRAMUSCULAR ROUTE

Usual daily dose is 15 mg per kg of body weight [illegible] mendations in insert accompanying each package.)

TOXICITY

When dosage recommendations are followed [illegible] low. In well hydrated patients under 45 years of [illegible] a total dose of 20 Gm. or less of KANTREX, the risk of [illegible]

In patients with impaired renal function [illegible] should be reduced to avoid accumulation of the drug in [illegible] the possibility of ototoxicity. In such patients, if therapy [illegible] audiograms should be obtained prior to and during treatment [illegible] stopped if tinnitus or subjective hearing loss develops or if [illegible] of high frequency response.

OTHER ROUTES OF ADMINISTRATION

KANTREX should be used by intr[illegible] when [illegible] practicable. KANTREX can also be employed for [illegible] an irrigating solution. See package insert for directions.

PRECAUTIONS

Use of antibiotics may [illegible] infection appears during therapy, appropriate [illegible]

SUPPLY

Available in rubber capped vials [illegible] tions (stable at room temperature indefinitely).

KANTREX Injection, 0.5 Gm. kanamycin (as sulfate) in 2 ml [illegible]
KANTREX Injection, 1.0 Gm. kanamycin (as sulfate) in 3 ml volume

CAPSULES [illegible]

INDICATIONS AND DOSAGE

For preoperative bowel sterilization [illegible] 1.0 Gm. (2 capsules) every [illegible]

For intestinal infections. Adults [illegible] 5 to 7 days. Infants and children [illegible]

PRECAUTION

Preoperative [illegible] KANTREX C[illegible] tion. Although [illegible] mucosa, the possibility of [illegible] considered.

SUPPLY

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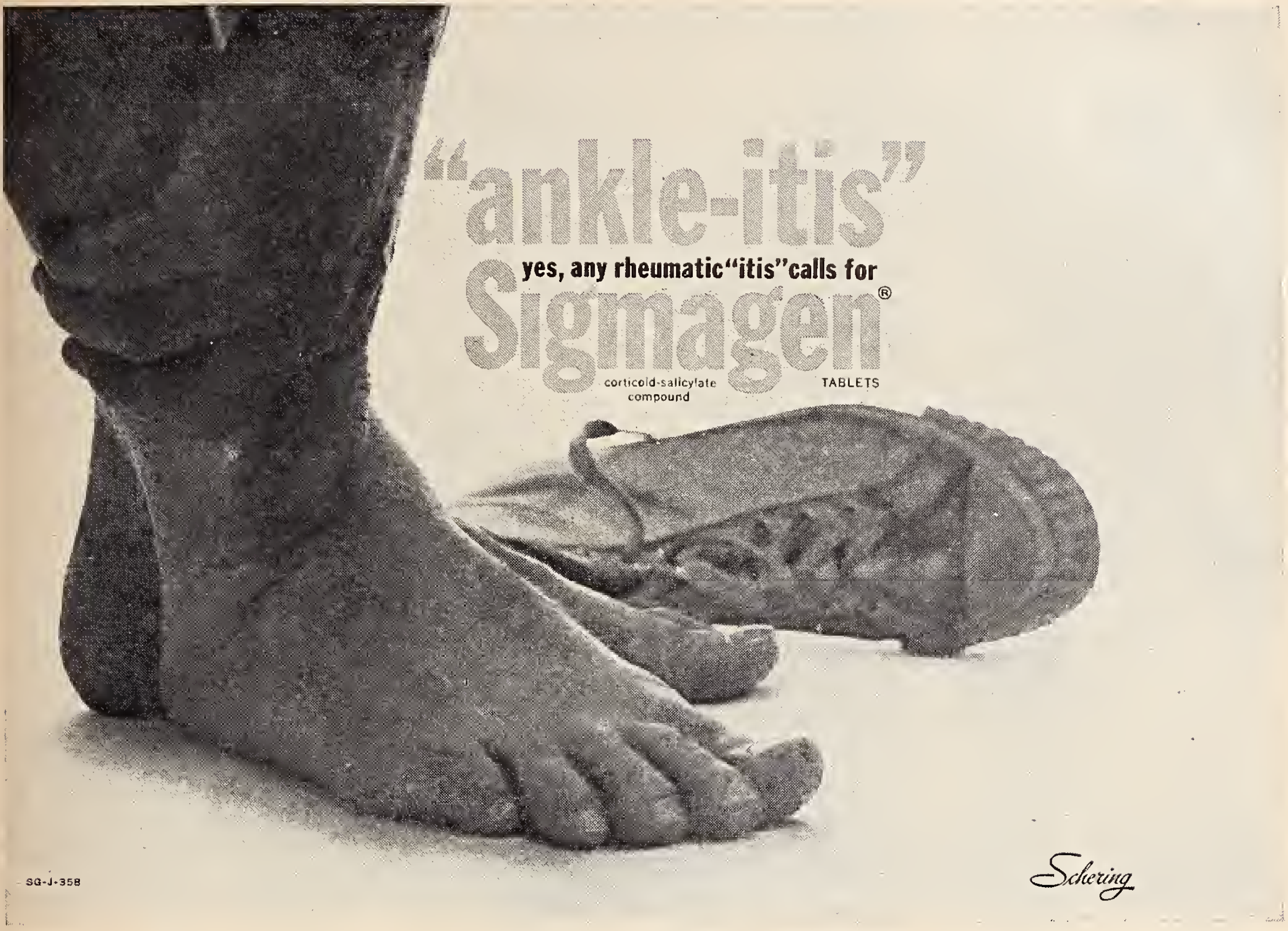
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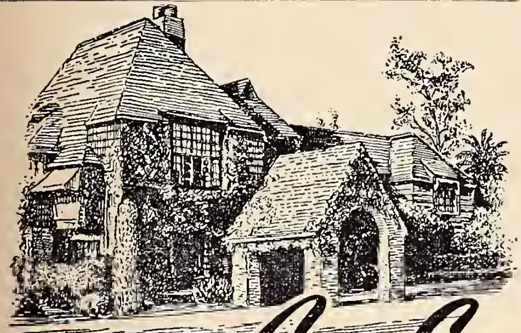

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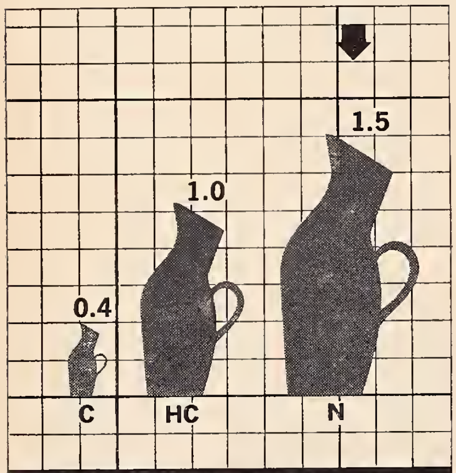
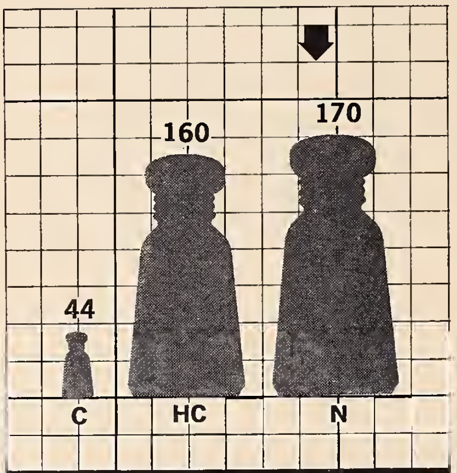
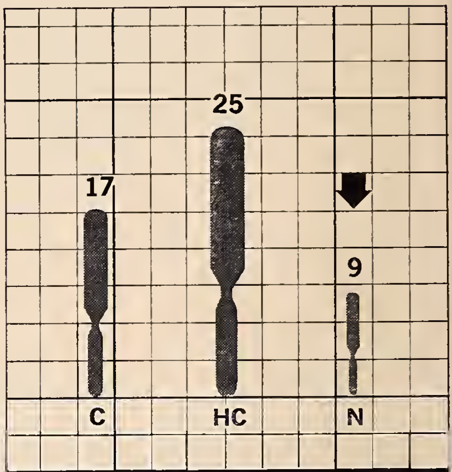
Comparison of electrolyte excretion pattern for the 24 hours following typical doses of chlorothiazide, hydrochlorothiazide, and Naturetin[1]



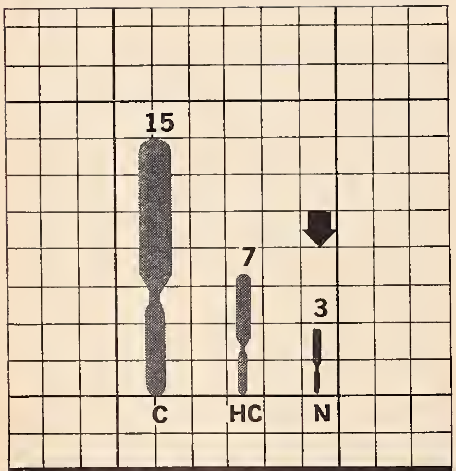
Urinary Volume (liters)
significantly increased
with Naturetin



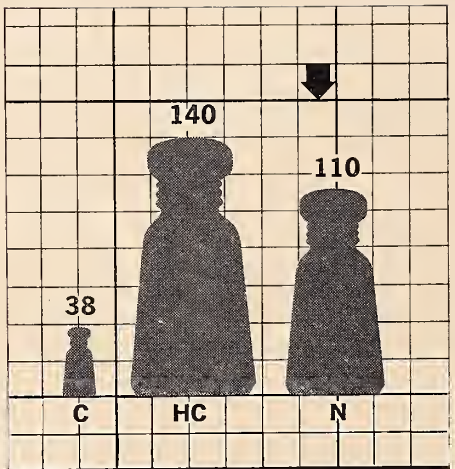
Natriuresis (mEq./24 hr.)
sodium excretion significantly
increased with Naturetin



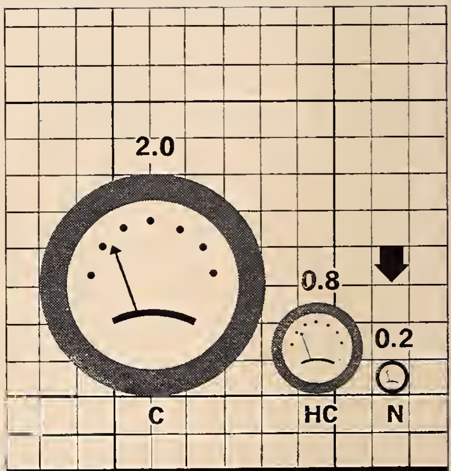
Potassium Excretion
(mEq./24 hr.)
least with Naturetin



Bicarbonate Excretion
(mEq./24 hr.)
least with Naturetin



Chloride Excretion
(mEq./24 hr.)
marked increases



Urinary pH
least increase with Naturetin

[1] **Typical Doses: Chlorothiazide – 1,000 mg.; Hydrochlorothiazide – 50 mg.; Naturetin (Benzydroflumethiazide) – 5 mg.**

1. *Adapted from: Ford, R. V., Squibb Clin. Res. Notes 2:1 (Dec.) 1959*

A single 5 mg. tablet once a day provides all these advantages[2]

- prolonged action — in excess of 18 hours
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- greater potency mg. for mg.—more than 100 times as potent as chlorothiazide
- potency maintained with continued administration
- low toxicity — few side effects — low salt diets not necessary
- comparative studies with chlorothiazide, hydrochlorothiazide, and Naturetin disclose that smallest doses of Naturetin produce greater weight loss per day
- in hypertension, Naturetin, alone or in combination with other antihypertensives, produces significant decreases in mean blood pressure and other favorable clinical effects
- purpura and agranulocytosis not observed
- allergic reactions rarely observed

[2] Reports (1959) to the Squibb Institute for Medical Research.

laturētin —*Indications:* in control of edema when diuresis is required, in congestive heart failure, the premenstrual syndrome, nephrosis and nephritis, cirrhosis with ascites, edema induced by drugs certain steroids); in the management of hypertension, used alone, combined with Raudixin (Squibb auwolfia Serpentina Whole Root), or with other antihypertensive drugs, such as ganglionic blocking agents.

ontraindications: none, except in complete renal shutdown.

recautions: when Naturetin is added to an antihypertensive regimen including hydralazine, eratrum, and/or ganglionic blocking agents, immediate reduction must be made in the dosage for all reparations; the dosage for ganglionic blocking agents must be decreased by 50% to avoid a precipitous rop in blood pressure. This also applies if these hypotensive drugs are added to an established Naturetin egimen . . . in hypochloremic alkalosis with or without hypokalemia . . . in cirrhotic patients or those on igitalis therapy when reductions in serum potassium are noted . . . in diabetic patients or those redisposed to diabetes . . . when increased uric acid concentrations are noted . . . when signs—eg or abdominal cramps, pruritus, paresthesia, rash—suggestive of hypersensitivity, are noted.

laturētin —*Dosage: in edema,* average dose, 5 mg., once daily, preferably in the norning; to initiate therapy, up to 20 mg., once daily or in divided doses; for naintenance, 2.5 to 5.0 mg., daily in a single dose. *In hypertension:* suggested nitial dose, 5 to 20 mg. daily; for maintenance, 2.5 to 15 mg. daily, depending n the individual response of the patient. When Naturetin is added to an antiypertensive regimen with other agents, lower maintenance doses of each rug should be used.

laturētin —*Supplied:* tablets of 2.5 mg. and 5 mg. (scored).

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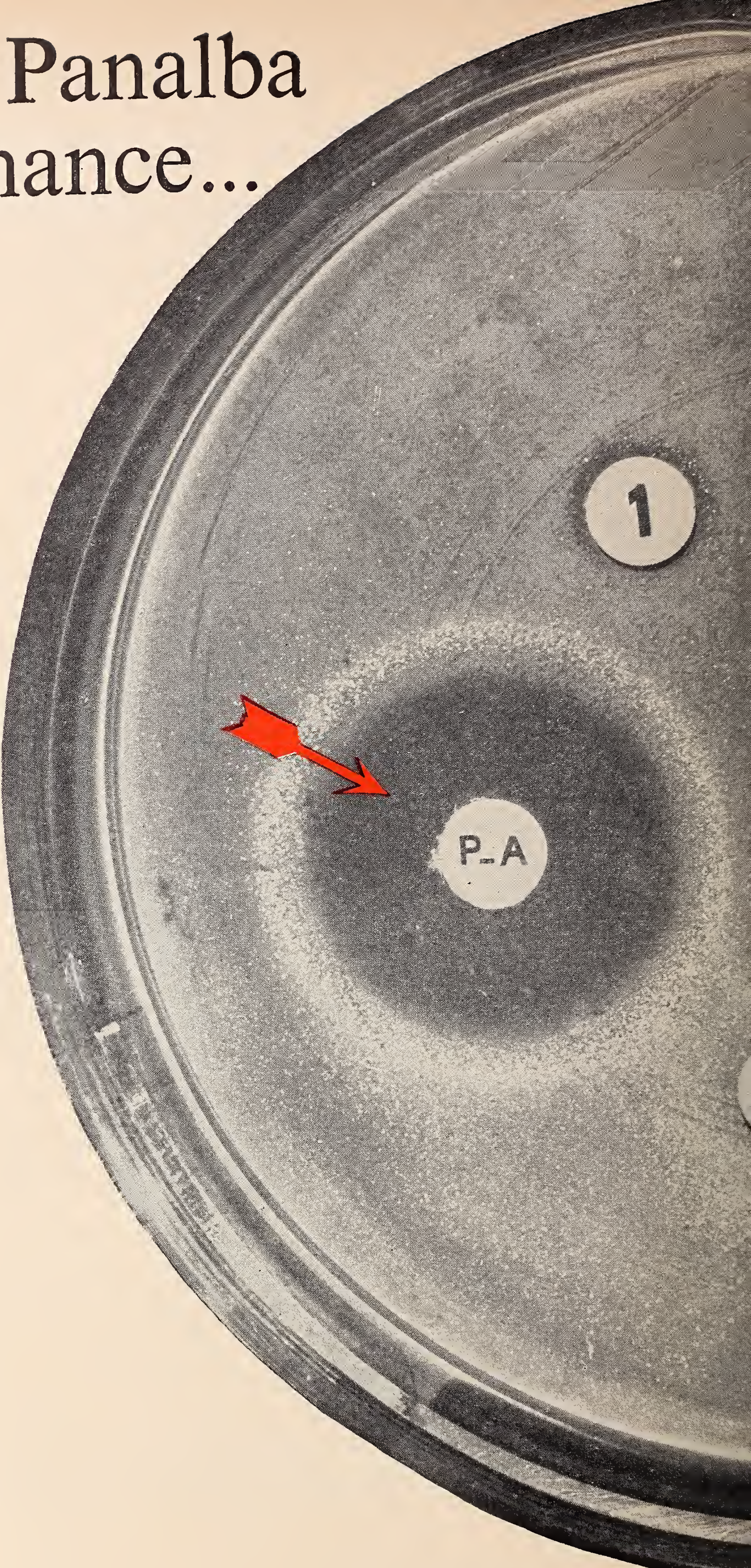

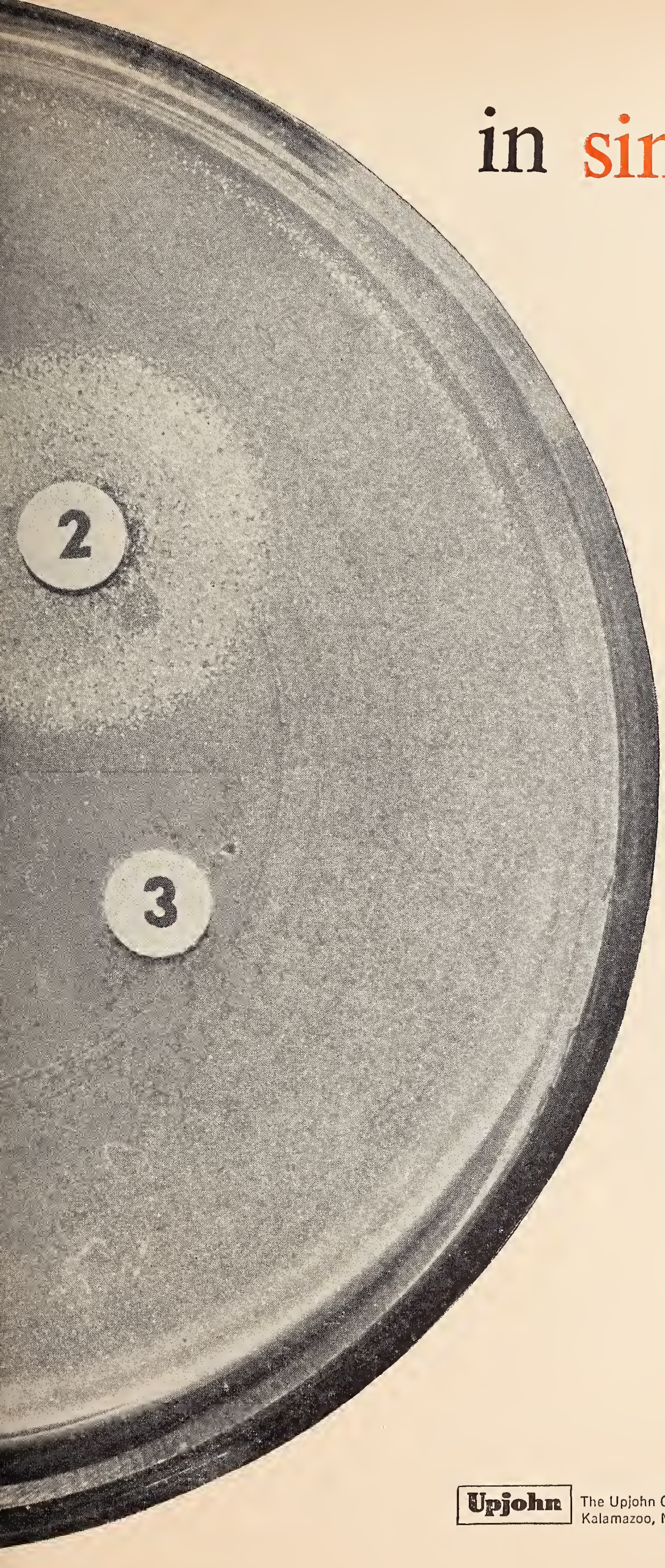

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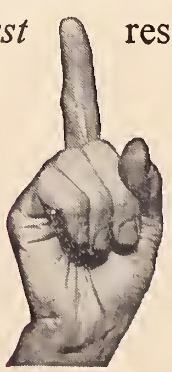

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1. Alexander, L. (35 patients): Chemotherapy of depression—Use of meprobamate combined with benactyzine(2-diethylaminoethyl benzilate) hydrochloride. J.A.M.A.**166**:1019, March 1, 1958. **2.** Bateman, J. C. and Carlton, H. N. (50 patients): Deprol as adjunctive therapy for patients with advanced cancer. Antibiotic Med.& Clin. Therapy. In press, 1959. **3.** Bell, J. L., Tauber, H., Santy, A. and Pulito, F. (77 patients): Treatment of depressive states in office practice. Dis. Nerv. System **20**:263, June 1959. **4.** Breitner, C. (31 patients): On mental depressions. Dis. Nerv. System **20**:142, (Section Two), May 1959. **5.** McClure, C. W., Papas, P. N., Speare, G. S., Palmer, E., Slattery, J. J., Konefal, S. H., Henken, B. S., Wood, C. A. and Ceresia, G. B. (128 patients): Treatment of depression—New technics and therapy. Am. Pract. & Digest Treat. **10**:1525, Sept. 1959. **6.** Pennington, V. M. (135 patients): Meprobamate-benactyzine (Deprol) in the treatment of chronic brain syndrome, schizophrenia and senility. J. Am. Geriatrics Soc. **7**:656, Aug. 1959. **7.** Rickels, K. and Ewing, J. H. (35 patients): Deprol in depressive conditions. Dis. Nerv. System **20**:364, (Section One), Aug. 1959. **8.** Ruchwarger, A. (87 patients): Use of Deprol (meprobamate combined with benactyzine hydrochloride) in the office treatment of depression. M. Ann. District of Columbia **28**:438, Aug. 1959. **9.** Settel, E. (52 patients): Treatment of depression in the elderly with a meprobamate-benactyzine hydrochloride combination. Antibiotic Med. & Clin. Therapy. In press, 1959. **10.** Splitter, S. R. (84 patients): The care of the anxious and the depressed. Submitted for publication, 1959.

and

11. Laughlin, H. P.: The Neuroses in Clinical Practice, Saunders, Philadelphia, 1956, pp. 448-481.

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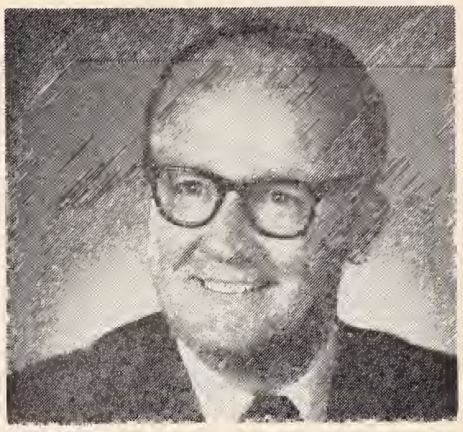

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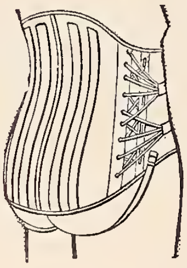

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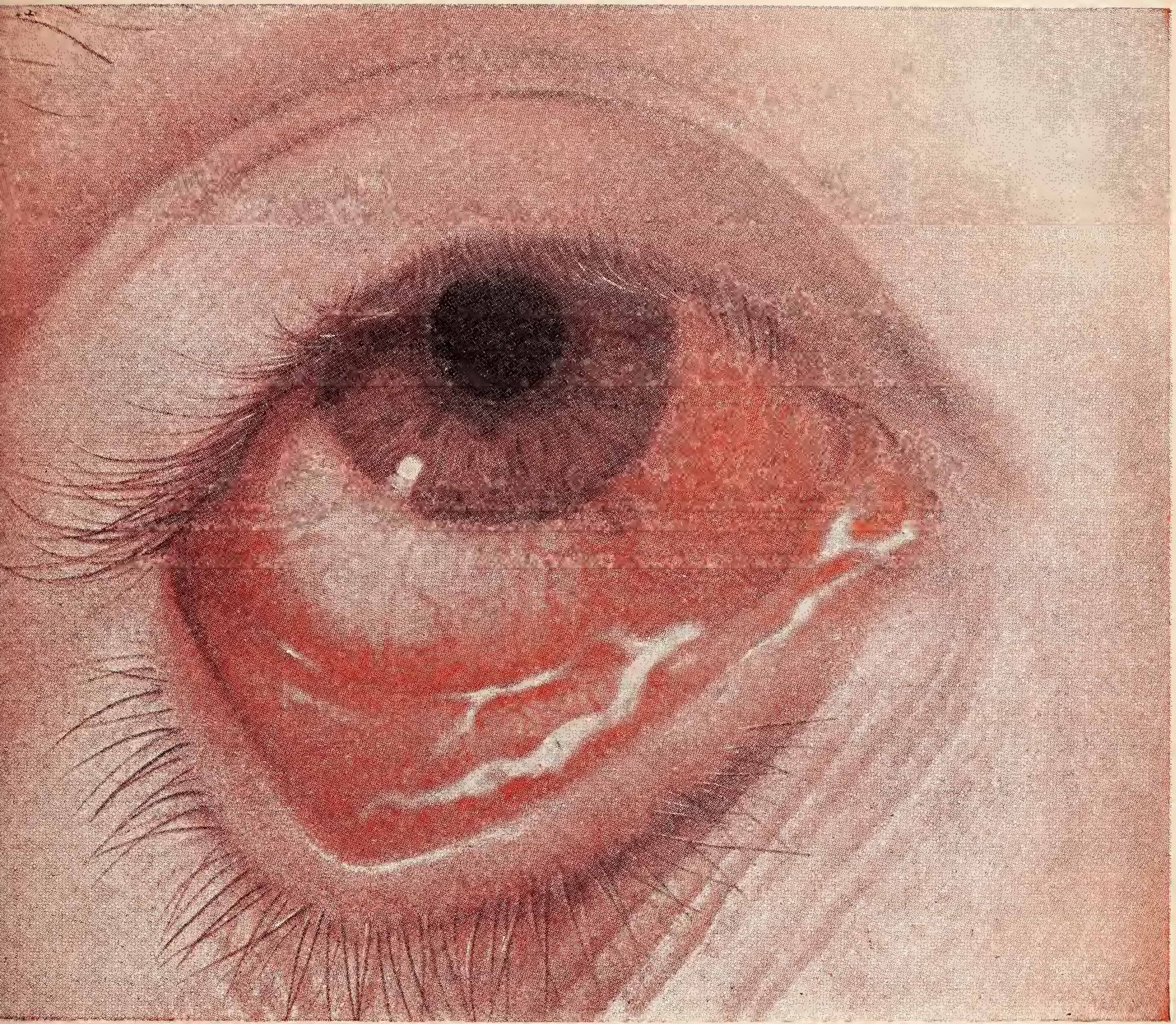

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1. Lippmann, O.: Arch. Ophth. 57:339, March 1957.
2. Gordon, D.M.: Am. J. Ophth. 46:740, November 1958.

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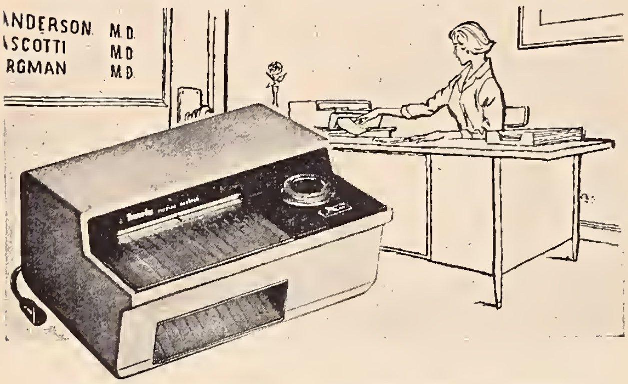
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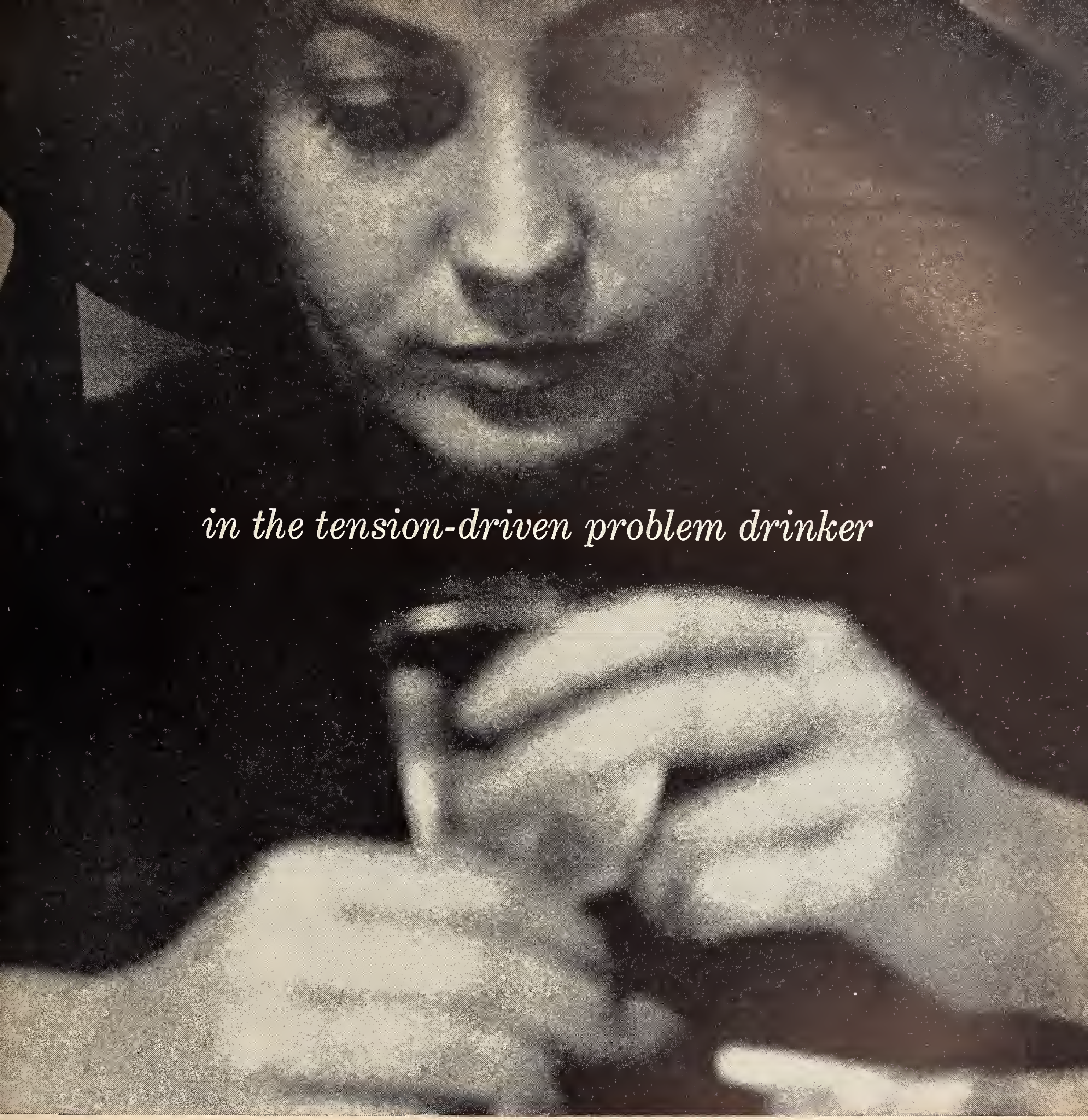
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Automotive Gases	10%	+ 9.3%
Drugs	6%	+35.1%
Poisons	5%	−16.4%
Drownings	4%	+ 1.7%
Jumping from high places	3%	− 2.3%
Knives, Axes	2%	−15.3%
Household Gases	1%	−46.7%
Unspecified	1%	−6.5%

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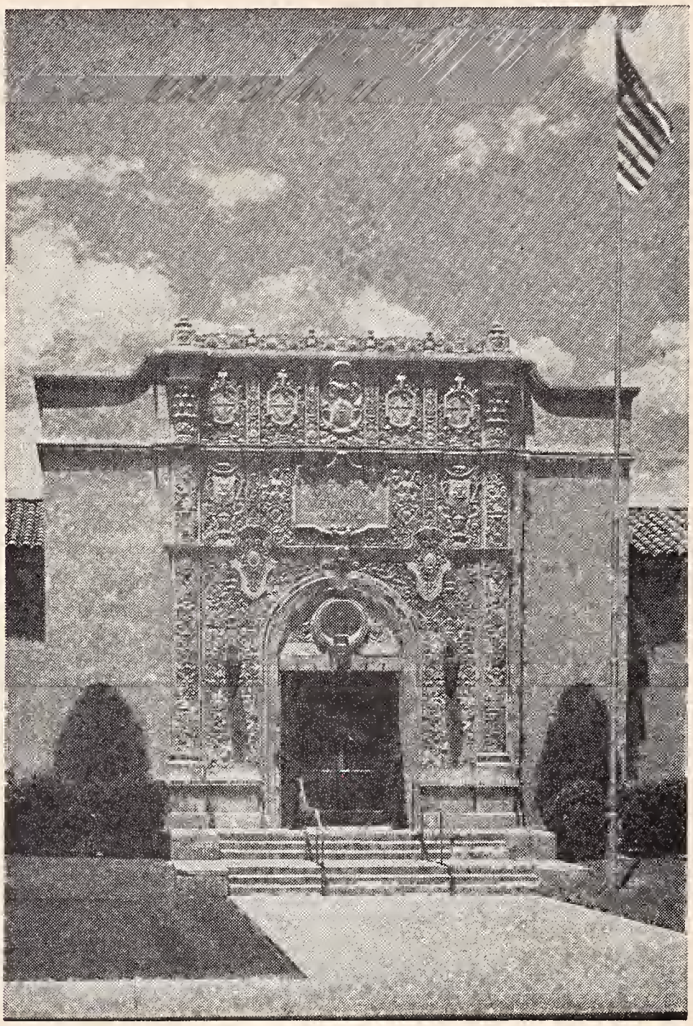

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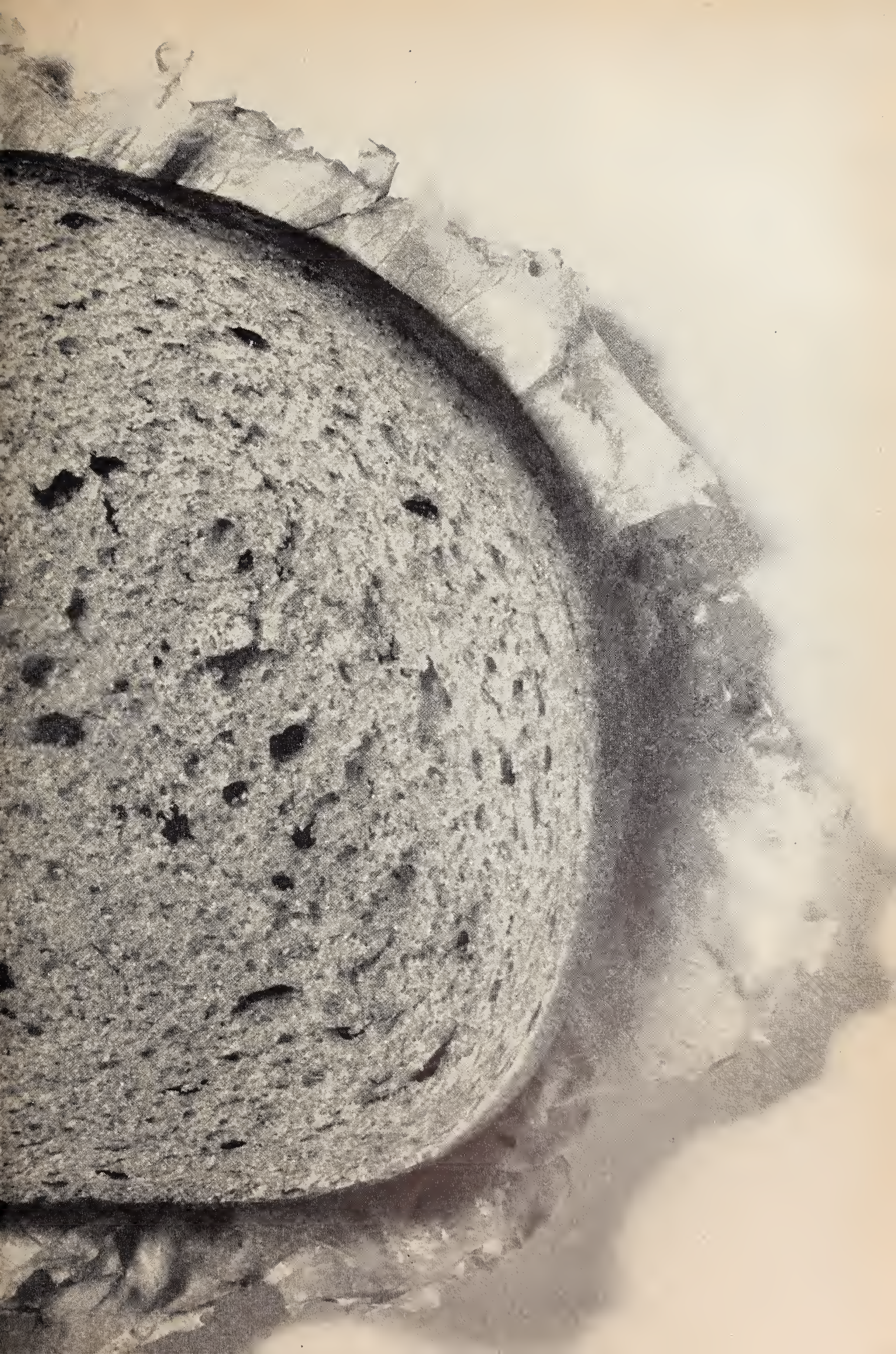

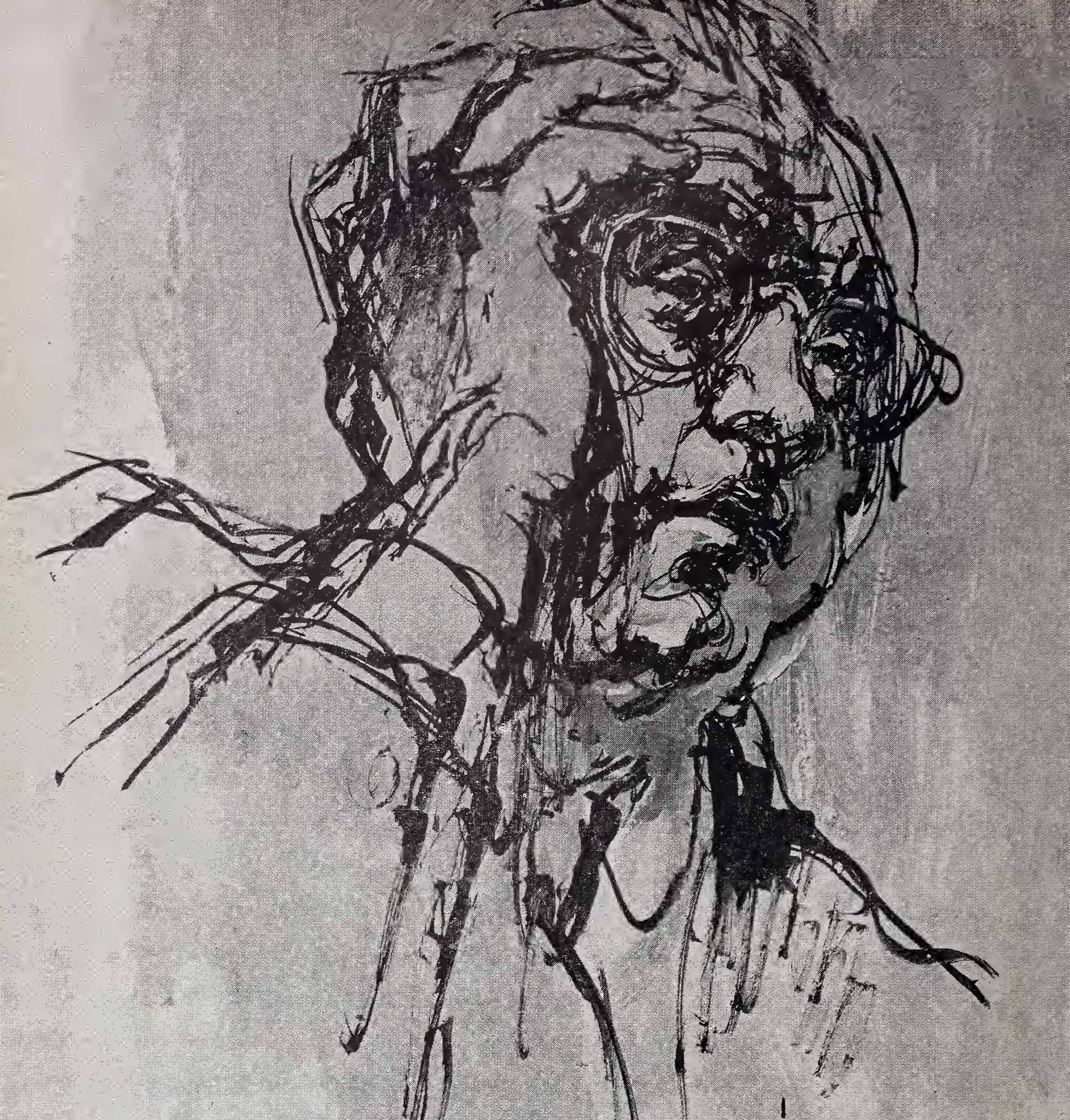

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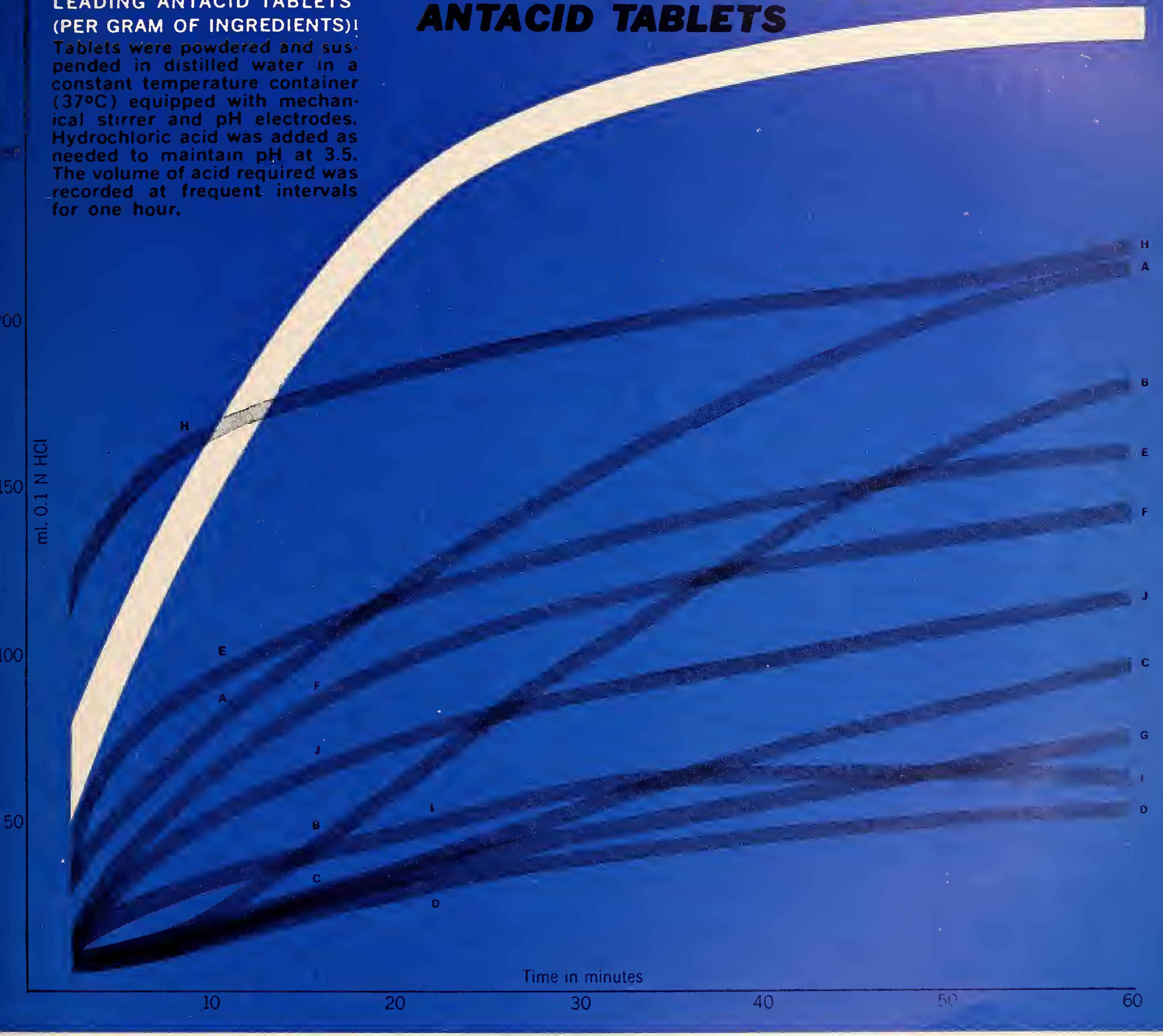

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Arizona Medicine

JOURNAL OF ARIZONA MEDICAL ASSOCIATION

MEDICAL SOCIETY OF THE UNITED STATES AND MEXICO

March, 1960

Vol. 17, No. 3

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Published monthly by the Arizona Medical Association, Inc. Business office at 1021 Central Towers Building, Phoenix, Arizona. Subscription $5 a year, single copy 50 cents. Entered as second class matter March 1, 1921, at Postoffice at Phoenix, Arizona, Act of March 3, 1879.

(The Editors of the Journal assume no responsibility for opinions expressed in the articles contributed by individual members.)

Tetracycline Phosphate Complex (TETREX®)
U.S. PAT. NO. 2,791,609
in the Therapy of
ACUTE PHARYNGITIS, ESPECIALLY WITH LYMPHADENITIS

Ideally, selection of the proper antibiotic for treatment of acute pharyngitis should await the laboratory reports on the susceptibility of the infecting bacteria. But the busy practitioner who sees many patients a day during the upper respiratory infection season may sometimes find it difficult to avoid the empirical choice of an antibiotic. Unfortunately, this practice may sometimes result in therapeutic failure.

No matter what the pressure of the immediate situation, it is worthwhile to consider taking a bacterial specimen from the infected pharynx for culture and sensitivity studies before starting treatment. Thus, a rational basis will be provided for changing the antibiotic should the first choice prove ineffective.

Which Antibiotic?

All other things being equal, the drug of choice is the one to which the pathogen is most susceptible. But if the exigencies of the situation force the physician to a prompt use of antibiotic, a broad-spectrum preparation that produces immediate high blood levels (e.g., tetracycline phosphate complex, TETREX) probably has the best chance of controlling the pathogen.

Later, the laboratory report frequently may indicate that any one of several antibiotic agents would be equally effective against the particular microorganism in question. In such a case other factors such as frequency and severity of side effects, sensitizing potential and toxicity should be considered.

If the acute pharyngitis in question should be due to gram-negative Klebsiella[1], penicillin will be of no value, nor will erythromycin be effective. However, this organism is susceptible to tetracycline. If the pathogen should turn out to be gram-positive Streptococcus or Staphylococcus, then penicillin, erythromycin, and tetracycline may all be effective against it.

Penicillin, however, in addition to having a limited spectrum, also causes many minor and some serious sensitivity reactions. In a recent survey[2] it was found that penicillin produced severe skin reactions. But most important was the observation that anaphylactic shock, with a fatality rate of about 9 per cent, was the most frequent serious reaction. Such severe reactions are almost always associated with parenteral administration.

The tetracyclines (e.g., TETREX) have the advantages of a broad range of antimicrobial activity and low toxicity. And in addition, the physician does not have to trouble himself or his patients with repeated blood studies when he prescribes TETREX. Minor reactions such as gastric upsets or mild skin rashes occur occasionally. The most serious side effects are staphylococcal and monilial overgrowth, but these are rare and can be adequately controlled.

Some Microorganisms Susceptible[a] *to Tetracycline* (TETREX)[b]

Streptococcus; Staphylococcus; Pneumococcus; Gonococcus; Meningococcus; *C. diphtheriae; B. anthracis; E. coli;* Proteus; *A. aerogenes; K. pneumoniae;* Shigella; Brucella; *P. tularensis; H. influenzae; T. pallidum;* Rickettsiae; Viruses of psittacosis and ornithosis, lymphogranuloma inguinale, primary atypical pneumonia; *E. histolytica; D. granulomatosis.*

[a] Some strains are not susceptible.

[b] Table adapted from Goodman, L. S., and Gilman, A.: The Pharmaceutical Basis of Therapeutics, 2nd edition, New York, The Macmillan Co., 1956, pp. 1322-1323.

High blood, body fluid, and tissue levels of active drug are quickly attained when the new phosphate preparation of tetracycline (TETREX) is used.

The semisynthetic tetracyclines have been in constant use since they were introduced in 1952. They have been proved clinically and have established themselves as safe, effective, and valuable antibiotic agents. But the final decision, the choice of agent, and the control of therapy must remain where it has always been, in the hands of the individual physician.

References: 1. Zinsser, H.: A Textbook of Bacteriology. 11th edition, New York, Appleton-Century-Crofts, 1957, p. 409. 2. Welch, H.: Lewis, C. H.; Weinstein, H. I., and Boeckman, B. B.: Severe reactions to antibiotics. A nationwide survey. Antibiotic Med. & Clin. Tber. 4:800 (December) 1957.

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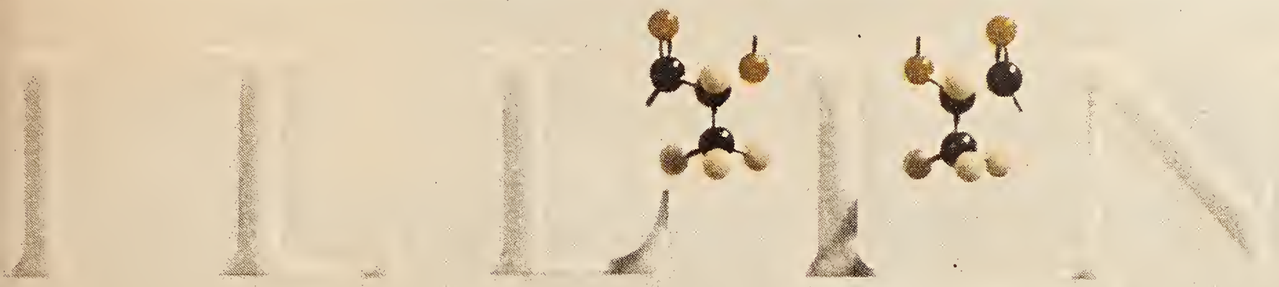

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SYNC

Significance of complementary action of isomers in SYNCILLIN

The antibiotic effect of the clinically available mixture, SYNCILLIN, is greater than that of either of its two component isomers alone against many important pathogens, including some penicillin-resistant staphylococci. This phenomenon has been described as *Isomeric Complementarity.*

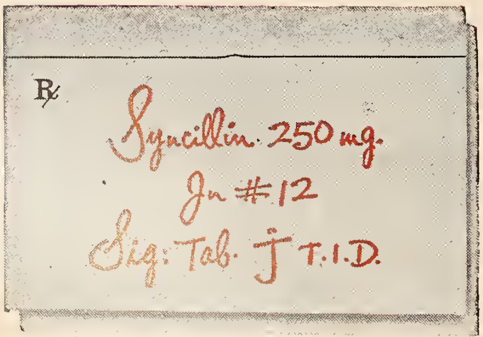
Significance of higher blood levels with SYNCILLIN

Higher blood levels may be of value with organisms of only moderate penicillin sensitivity where doubling the blood concentration may be essential for effective bactericidal action. In addition, these higher levels may be necessary where there is infection in areas with a poor blood supply.[6] Under these circumstances a higher blood concentration may provide the increased diffusion pressure required to deliver adequate amounts to the tissue. Also, antibiotic activity of SYNCILLIN is directly proportional to oral dosage. Increasing the dosage may, therefore, enhance the drug's effectiveness in certain cases.

Efficacy of SYNCILLIN against staphylococci and other resistant organisms

Studies have shown that SYNCILLIN is effective *in vitro* against 60 to 75% of hospital "staph" strains, while penicillin G and penicillin V are now effective against only 30 to 50%.[1, 2] Therefore, if clinical judgment indicates the use of penicillin, SYNCILLIN would be expected to be the most effective. However, since some strains are still resistant to SYNCILLIN as well as to the other penicillins, cultures and sensitivity tests should be performed where indicated by clinical judgment.

There have recently been reports of decreased efficacy of penicillin in streptococcal[3] and gonococcal[4, 5] infections. The emergence of penicillin-resistant gonococci appears to be associated with an increase in the incidence of gonorrhea all over the world. When a less sensitive strain is encountered the higher blood levels produced by SYNCILLIN may be most helpful.



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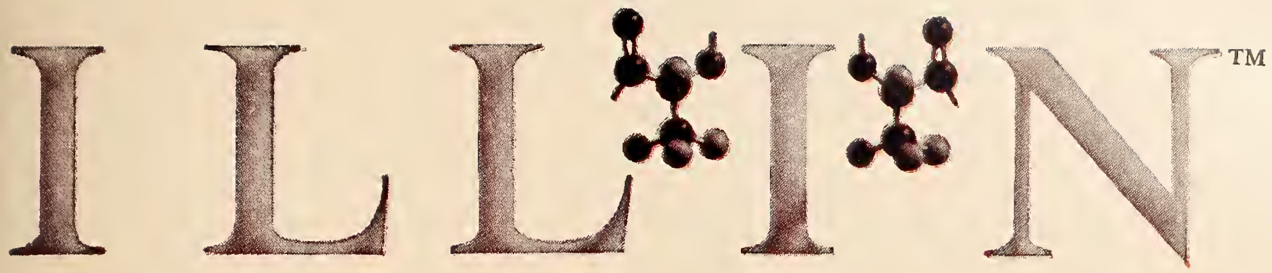

Relation of intermittent high blood levels of SYNCILLIN to antibacterial efficacy

SYNCILLIN, like all clinically available penicillins, is bactericidal. Periodic high blood concentrations are sufficient to permit complete eradication of sensitive pathogens. Continuous high blood levels are not required with SYNCILLIN. According to Eagle,[7] "Soon after penicillin attains effective concentrations, the bacteria cease multiplying; and the bacteriostatic effect persists for a number of hours after penicillin has fallen to concentrations that are wholly ineffective....The therapeutic significance of this postpenicillin recovery period is enhanced by the fact that the recovering bacteria, damaged but not killed by the previous exposure to penicillin, are abnormally susceptible to the host defenses. In consequence, the bactericidal process *in vivo* continues for many hours after the drug itself has fallen to ineffective concentrations."

Reduced rate of inactivation of SYNCILLIN by staph penicillinase

Bacterial resistance to penicillin has been attributed to the action of penicillin-inactivating enzymes produced by the invading organisms. SYNCILLIN is less affected by staphylococcal penicillinase than either of its component isomers. Further, SYNCILLIN is shown to be less inactivated by this enzyme than penicillin V and penicillin G. Penicillinase from *B. cereus* likewise inactivates SYNCILLIN less rapidly than penicillin V and G. But this would not impede the therapeutic use of this penicillinase in allergic reactions. This is because the massive dosage with which this enzyme is administered would effectively destroy SYNCILLIN in the body.

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Indications: SYNCILLIN is recommended in the treatment of infections caused by pneumococci, streptococci, gonococci, corynebacteria, and penicillin-sensitive staphylococci. In addition, SYNCILLIN is effective against certain strains of staphylococci resistant to other penicillins. SYNCILLIN, like other oral penicillins, is not recommended at the present time in deep-seated or chronic infections, subacute bacterial endocarditis, meningitis, or syphilis.

Dosage: 125 mg. or 250 mg. three times daily, depending on the severity of infection. Larger doses (e.g., 500 mg. t.i.d.) may be used for more severe infections. SYNCILLIN may be administered without regard to meals. Beta hemolytic streptococcal infections should be treated with SYNCILLIN for at least ten days.

Precautions: At the present time it is not possible to draw definite conclusions regarding the incidence of allergenicity to SYNCILLIN or its cross-allergenicity with natural penicillins. *Therefore, the usual precautions for oral penicillin therapy should always be observed.* Patients with histories of asthma, hay fever, urticaria, or previous reactions to penicillin should be watched with special care. Administration of oral penicillin, in rare instances, may provoke acute anaphylaxis, particularly in penicillin-sensitive individuals.

Diarrhea has been reported occasionally following heavy dosage. If this occurs, lengthen the interval between dosages.

If superinfection occurs during therapy, appropriate measures should be taken. Since some strains of staphylococci are resistant to SYNCILLIN as well as to other penicillins, cultures and sensitivity tests should be performed where indicated by clinical judgment. As is true with all antibiotics, clinical response does not always correlate with laboratory bacterial sensitivity reports.

Supply: 125 and 250 mg. tablets, bottles of 25 and 100. 125 mg. powder for oral solution, 60 ml. vials.

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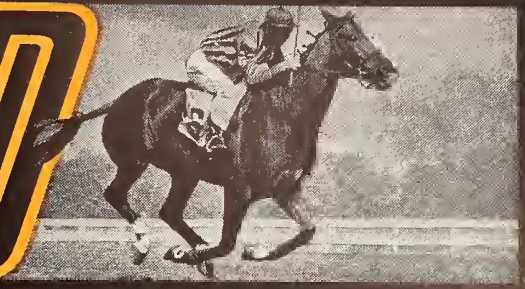

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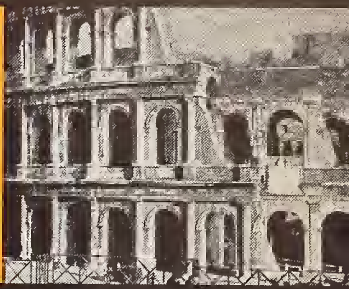

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SQUIBB VITAMIN-MINERAL SUPPLEMENT *(270 tablets)*
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In vitro facts and in vivo findings on new broad-spectrum DECLOMYCIN

A MAJOR CONTRIBUTION TO ANTI-INFECTIVE THERAPY

PROPERTIES

PERFORMANCE

IMPORTANCE

PROPERTIES:

Greater inhibitory action ...lower daily intake than other tetracyclines

A unique new fermentation product of *Streptomyces aureofaciens,* DECLOMYCIN Demethylchlortetracycline achieves notably greater antibiotic activity against infections[2,4,7,8,10,14,19,20,24] because of two basic factors: (1) inherent potency, and (2) greater stability in most body fluids.[15,17,18,27] Actual clinical activity has, in many instances, been better than expected on the basis of *in vitro* sensitivity tests.[14,18,19]

Broad-spectrum control ...with far less antibiotic

Activity levels of DECLOMYCIN Demethylchlortetracycline are higher than those of previous broad-spectrum antibiotics. Hardier strains of various organisms appear to be somewhat more responsive.[4] Apparently some strains of Pseudomonas, Proteus and *A. aerogenes,* frequently refractory to therapy, are sensitive to DECLOMYCIN.[7,23,25,26]

DECLO

Sustained peak activity ...greater security of control

Prolonged retention and compatibility of DECLOMYCIN with body fluids provides peak activity between doses.[15,17,18,27] Inhibition of bacteria is more constant.

24-48 hours extra activity...protection against relapse

DECLOMYCIN maintains effective antimicrobial action for one to two days after stopping dosage.[7,14] Resurgence of a few viable pathogens, with relapse...and low patient defense against secondary bacterial invasion during the first post-therapy days . . . are largely offset.

MYCIN®

Demethylchlortetracycline Lederle

PERFORMANCE

Susceptibility Tests

Roberts, M. S., *et al.*[25]
New York, N. Y.

Pre-treatment sensitivity tests in 75 genitourinary patients showed DECLOMYCIN Demethylchlortetracycline to be superior against the large majority of organisms and in no instance inferior to tetracycline. DECLOMYCIN apparently has more effective coverage... several strains of *Proteus* and *A. aerogenes* responded.

Tolerance & Toxicity

Boger, W. P., and Gavin, J. J.[2]
Norristown, Pa.

Administration of the recommended 600 mg. (4 capsules) daily for 30 days to a small group of elderly patients revealed no hematologic, hepatic and urinary alteration or other abnormal finding. No clinical side effects were observed.

Gonococcal Infection

Marmell, M., and Prigot, A.[20]
New York, N. Y.

All except two of 63 patients with acute gonorrhea responded promptly to therapy with DECLOMYCIN. Fifteen received 250 mg. q.i.d. for one day, the remainder received 600 or 750 mg. in divided doses over one or two days. No side effects.

General Medicine

Lichter, E. A., and Sobel, S.[19]
Chicago, Ill.

One hundred and sixty-nine patients with various infections showed generally equivalent response to four dosage regimens, including the recommended level. Of 29 pneumococcal pneumonias, all recovered with 15 afebrile in 48 hours or less – except a few patients with preterminal underlying disease. All 42 scarlet fever patients recovered with 32 afebrile in 48 hours or less. Other patients also responded satisfactorily with few exceptions. No blood, liver or kidney toxicity found. G.I. side effects occurred in only 2 per cent at the recommended dosage, or less, and were easily reversible.

Respiratory Infection

Perry, D. M., *et al.*[22]
Seattle, Wash.

Good or fair response in 24 of 30 cases of acute bacterial pneumonia, and in all of six cases of acute bronchitis. Side effects occurred at higher dosage but were uniformly absent when dosage was limited to 600 mg. per day.

Various Infections

Finland, M., *et al.*[7]
Boston, Mass.

Eighty patients with various infections were treated with DECLOMYCIN Demethylchlortetracycline and an equal number with tetracycline. Therapeutic response was indistinguishable between the two groups. However, DECLOMYCIN Demethylchlortetracycline dosage was much lower (50 to 60 per cent of that of tetracycline.) In addition, incidence of side effects with demethylchlortetracycline was only half that experienced with tetracycline.

Pyelonephritis

Vineyard, J. P.,*et al.*[29]
Dallas, Tex.

Therapy with DECLOMYCIN was successful in 12 of 13 patients with pyelonephritis. Sterile cultures were obtained in nine patients within six to 14 days. Among the organisms suppressed were strains of *A. aerogenes, E. coli* and paracolon bacillus. In most cases, DECLOMYCIN was used jointly with another antibiotic.

Soft Tissue Infection

Prigot, A., *et al.*[24]
New York, N. Y.

DECLOMYCIN was used alone or auxiliary to surgical measures in 150 cases of acute soft tissue infection, mostly ambulatory. Full resolution of infection was achieved in all cases, average length of treatment being six days. Dosage was 600 or 750 mg. daily. Side effects consisted of transitory G.I. disturbances in three cases.

DECLO

Urinary Infection

Trafton, H. M., and Lind, H. E.[28]
Brookline, Mass.

Clinical response was favorable in a majority of 50 cases of urinary tract infections with relief of symptoms, elimination, or marked reduction, of pyuria and with urine sterilization in some. DECLOMYCIN Demethylchlortetracycline was administered in one-half to one-third the daily milligram level of related antibiotics, for 8 days.

No significant diarrhea occurred in any case although mild nausea and upper G.I. symptoms were fairly common. Phototoxicity occurred in six cases.

Antibiotic-Resistant Infections

Compilation of reports of
210 clinical investigators.[23]

In 570 treated for a great variety of infections, DECLOMYCIN was successful in resolving infection or in effecting marked improvement in 81 per cent, after failure of other antibiotics.

Pediatric Infection

Fujii, R., *et al.*[9]
Tokyo, Japan

Therapeutic results, elicited in 309 pediatric patients with average daily dosage of 15 mg./kg., were equal to those produced by 30 mg./kg. of buffered tetracycline preparations. Satisfactory results were obtained in 75 per cent. No appreciable side effects when 15 mg./kg./day dosage was not exceeded.

Pediatric Infection

Hall, T. N.[12]
San Francisco, Cal.

All eight cases of ophthalmic, respiratory or otic infection responded to four to twelve days of DECLOMYCIN therapy (5 recovered, 2 greatly improved, 1 improved). One skin reaction, in a case receiving the higher trial dosage of 7 mg./lb. daily, occurred.

Pneumonias

Duke, C. J., *et al.*[5]
Washington, D. C.

Results were satisfactory in all 32 cases of acute bacterial penumonia, excepting for two caused by non-susceptible organisms. Over half had been complicated by pleural, suppurative, bronchial, or underlying structural lung problems. Dosage was low. No toxicity found. Acceptance and toleration were excellent.

Intestinal & Respiratory Infection

Hartman, S. A.[13]
Sherman Oaks, Cal.

Six cases of g.i. infection (diverticulitis, ileitis, colitis) responded in three to eight days on the lower milligram intake...even after failure in most with sulfa, neomycin or penicillin-streptomycin. Complete recovery was gained in 5 respiratory cases on a shorter schedule; another withdrew with occurrence of thrush. No other side effects were reported.

Respiratory Infection

Feingold, B. F.[6]
San Francisco, Cal.

All 13 upper or lower respiratory infections demonstrated very good response in 2-3 days on recommended dosage. No side effects were reported.

Various Infections

Compilation of reports of
210 clinical investigators.[23]

Of 1,904 patients with adequate follow-up treated for a wide diversity of infections, 87 per cent were reported as cured or improved. Most patients received one 150 mg. tablet every 6 hours. Therapy usually was for three to eight days. Side effects, mostly referable to the gastrointestinal tract, occurred in 200 patients.

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PERFORMANCE

PERFORMANCE *(continued)*

Respiratory Infection & Others

Gates, G. E.[11]
South Bend, Ind.

Of 65 cases, predominantly respiratory infections, but including some of cystitis and cellulitis, 50 had a good response, 12 were fair and three were failures. One of the failures was a case of chronic ulcerative colitis and two were respiratory infections. The only complication was a slight vulvular pruritus and burning tongue occurring near the end of a week's treatment of residual pneumonitis.

Pustular Dermatoses

Kanof, N. B., and Blau, S.[16]
New York, N. Y.

Eighty-five per cent of 67 patients responded with excellent or good results on a DECLOMYCIN schedule of one 150 mg. capsule q.i.d. for two to twelve weeks. Three poor responses were related to highly resistant organisms. No pruritus or drug eruptions developed. Only four cases showed nausea or diarrhea in the long therapeutic course.

Surgical Infection

Floyd, R. D., and Anlyan, W. G.[8]
Durham, N. C.

Successful results were generally obtained in 60 patients given 600 mg. DECLOMYCIN daily (or slightly less) for five to 15 days. No infection developed in the clean or contaminated prophylaxis group. Most frank infections responded... including several refractory to previous antibiotics. No toxicity evidenced. Intestinal toleration was excellent.

Wound Infections & Others

Meyer, B. S.[21]
Birmingham, Ala.

Thirty-five cases, chiefly prophylactic, and some traumatic-surgical wound infections were treated usually on one capsule DECLOMYCIN q. 6 h. for two to eight days. Over 80 per cent responded, including one with Pseudomonas etiology. Minor itching or nausea occurred in two; prominent nausea developed in one on a q. 4 h. schedule.

Topical & Wound Infections

Stewart, J.[26]
New Orleans, La.

Of 21 patients followed, 15 completely recovered, four improved in four to 42 days on 600 mg. daily. Seven had not responded to various other therapies. One had *A. aerogenes* predominance, complicated by Proteus and *E. coli*. Cases were traumatic-surgical-topical infections with some respiratory. One questionable reaction of anemia was encountered.

Oral Infection

Arbour, E. F.[1]
New Orleans, La.

Of four patients treated, three responded to one capsule DECLOMYCIN q. 6 h. for three days. No change in one case of chronic proliferating periodontitis. No adverse reactions seen.

Brucellosis

Chávez, Max, G.[3]
Mexico, D. F.

All nine patients infected with *Brucella melitensis* were afebrile on fourth or fifth day of DECLOMYCIN therapy and asymptomatic within 15 days. Treatment lasted for 45 days. No relapses occurred. Hepatic, renal, or hematologic toxicity was not seen. Minor or occasional intestinal reactions in some cases did not require discontinuance.

DECLO

IMPORTANCE...

in the average patient – DECLOMYCIN reduces the possibility of gastrointestinal intolerance and increases the likelihood of an uneventful therapeutic course. Variants of an infecting organism are less likely to survive the high, sustained activity and post-dosage control. Minor or major reverses or "setbacks" during therapy may be avoided. Susceptibility to secondary infection when dosage is terminated is counteracted by the "extra-day" activity.

in mixed infections – DECLOMYCIN provides satisfactory control of conditions involving multiple pathogens. Since organisms vary in sensitivity at given antibiotic levels, the higher DECLOMYCIN activity tends to inhibit a greater proportion of the less susceptible strains. Remission and bacteriologic cure can thus progress at a faster pace.

in the absorption-deficient – The high activity/intake ratio of DECLOMYCIN provides a wider margin of security for those with disturbed or abnormal absorption or with underlying gastrointestinal dysfunction. Inhibitory levels remain more than adequate in most.

under adverse host conditions – In debility, malnutrition, neoplasm, diabetes, or other organic, chronic or underlying disease, DECLOMYCIN may be vital to successful resolution of infection. *Generally in geriatrics,* for the same reason, DECLOMYCIN should often be a broad-spectrum of choice.

if an occasional dose is missed – The sustained action of DECLOMYCIN protects against possible loss of control. In the sleeping patient, an occasional dose may be foregone without adverse effect, while benefits of such rest are gained. Arbitrary rejection of a dose by pediatric or geriatric patients...simple forgetfulness...or postponing a dose will not appreciably reduce antibiotic activity provided these do not occur frequently.

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CAPSULES, 150 mg., bottles of 16 and 100. *Dosage:* Average adult 1 capsule four times daily.

PEDIATRIC DROPS, 60 mg./cc. (custard flavor) in 10 cc. bottle with calibrated dropper. *Dosage:* 1-2 drops (3-6 mg.) per pound body weight per day—divided into 4 doses.

ORAL SUSPENSION, 75 mg./5 cc. teaspoonful (custard flavor) in 2 oz. bottle. *Dosage:* 3-6 mg./lb./day—divided in 4 doses.

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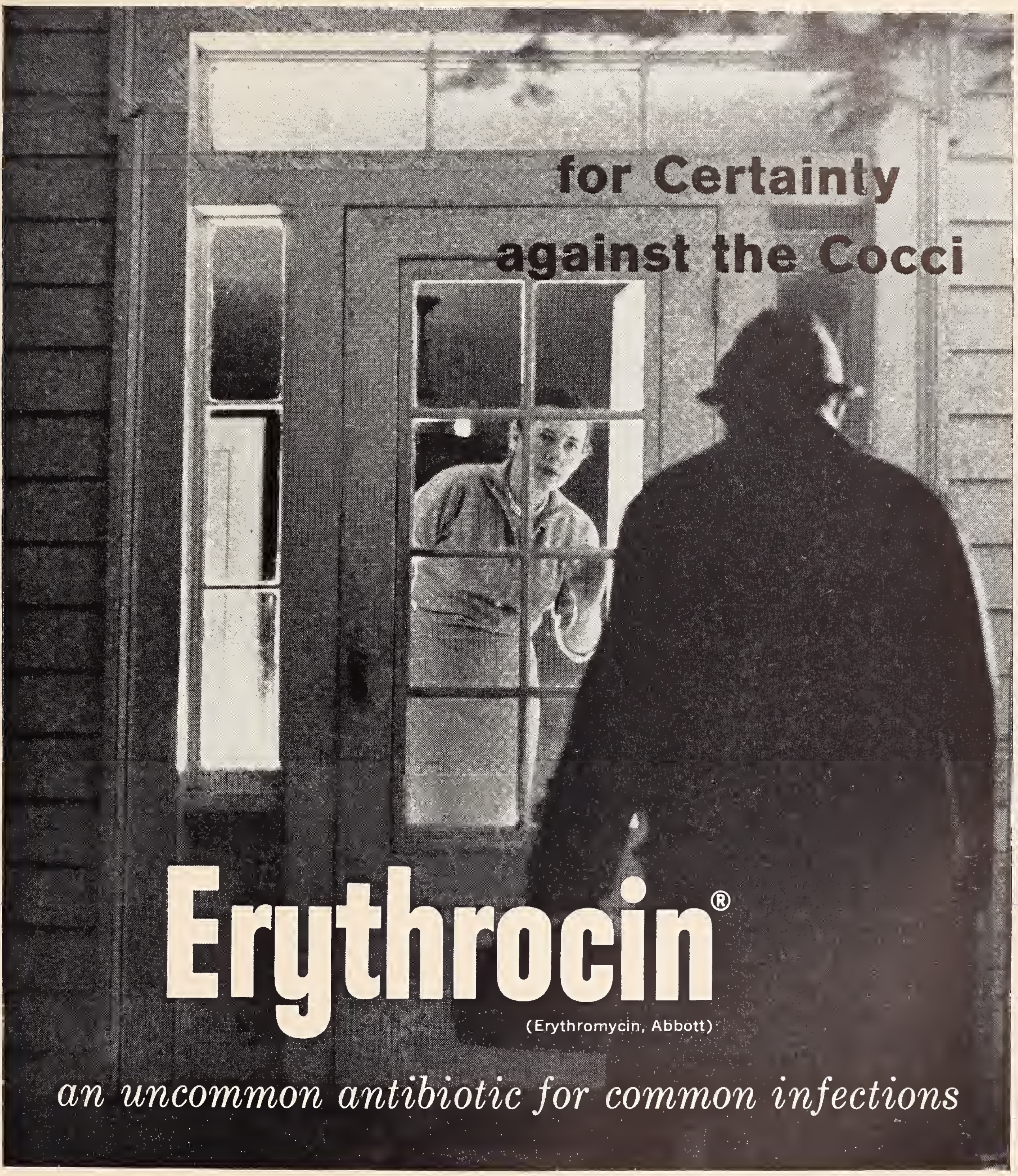

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COMPARE THE DATA ON ENARAX . . . the new combination of an **inherently** long-acting anticholinergic (oxyphencyclimine) and Atarax, the non-secretory tranquilizer. Note the effectiveness of oxyphencyclimine:

OBSERVE THE OXYPHENCYCLIMINE REPORTS . . .

McHardy: "[Oxyphencyclimine] has proved to be an excellent sustained-action anticholinergic in our study of this agent over a period of eighteen months."[1]

Kemp: ". . . for the majority of patients, one tablet every 12 hours provided adequate control. This characteristic long action . . . may constitute an advantage of this drug as compared to coated 'long-acting' preparations of other compounds."[3]

Add Atarax to this 12-hour anticholinergic. The resulting combination—ENARAX—now gives relief from emotional stress, in addition to a reduction of spasm and acid. Atarax does not stimulate gastric secretion. No serious adverse clinical reaction has ever been documented with Atarax.

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Does the medication you now prescribe assure you of all these benefits? If not, why not put your next patient with peptic ulcer or G.I. dysfunction on therapy that **does.**

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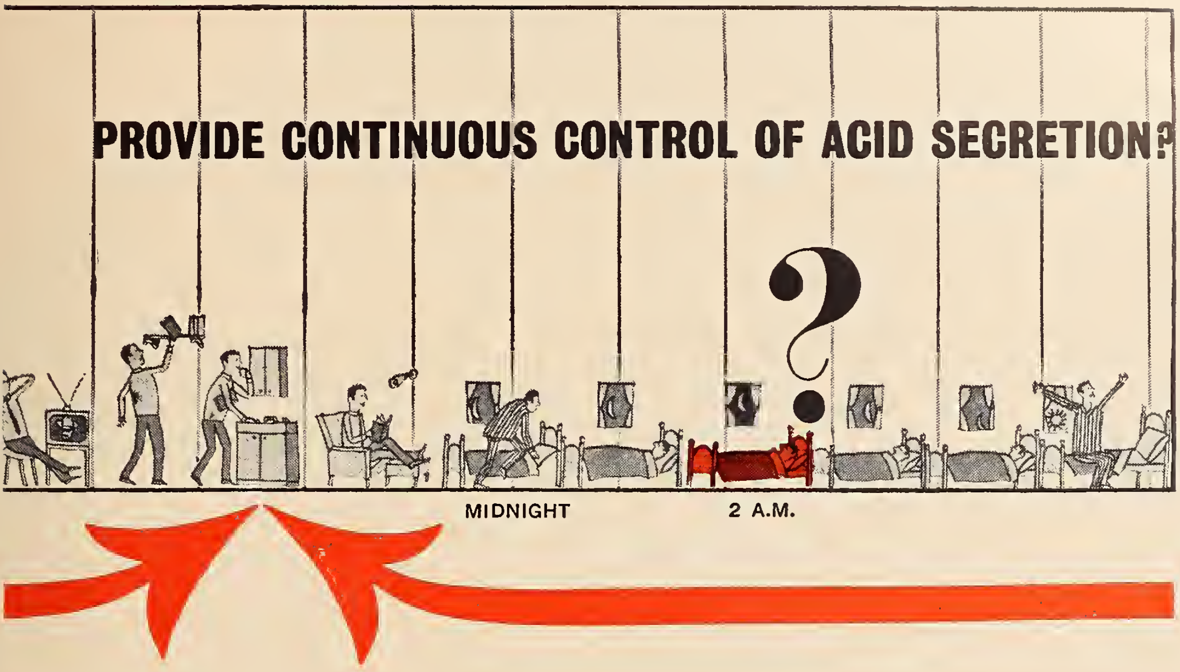
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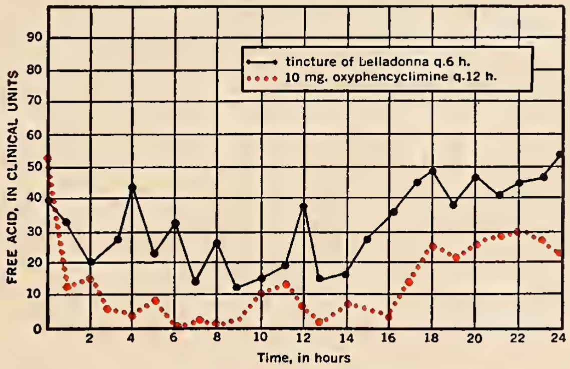

Clinical Diagnosis: Peptic Ulcer—Gastritis—Gastroenteritis—Colitis—Functional Bowel Syndrome—Duodenitis—Hiatus Hernia (symptomatic)—Irritable Bowel Syndrome—Pylorospasm—Cardiospasm—Biliary Tract Dysfunctions—and Dysmenorrhea.

Clinical Results: Effective in over 92% of cases.

As for Safety: "Side reactions were uncommon, usually no more than dryness of the mouth...."[4]

Each ENARAX tablet contains:

Oxyphencyclimine HCl	10 mg.
Hydroxyzine (ATARAX®)	25 mg.

Dosage: One-half to one tablet twice daily—preferably in the morning and before retiring. The maintenance dose should be adjusted according to therapeutic response. Use with caution in patients with prostatic hypertrophy and with ophthalmological supervision only in glaucoma.

Supplied: In bottles of 60 black-and-white scored tablets.

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Phenaphen with Codeine Phosphate 1/4 gr. (16.2 mg.)

PHENAPHEN NO. 3
Phenaphen with Codeine Phosphate 1/2 gr. (32.4 mg.)

PHENAPHEN NO. 4
Phenaphen with Codeine Phosphate 1 gr. (64.8 mg.)

Also —

PHENAPHEN **In each capsule**

Acetylsalicylic Acid 2½ gr. .	(162 mg.)
Phenacetin 3 gr.	(194 mg.)
Phenobarbital ¼ gr.	(16.2 mg.)
Hyoscyamine sulfate	(0.031 mg.)

PHENAPHEN® WITH CODEINE

Robins

A. H. ROBINS CO., INC., RICHMOND 20, VIRGINIA

Ethical Pharmaceuticals of Merit since 1878

Trilafon® perphenazine for the anxiety in the person overwhelmed by family illness...selective anxiety relief with minimal drowsiness or dulling

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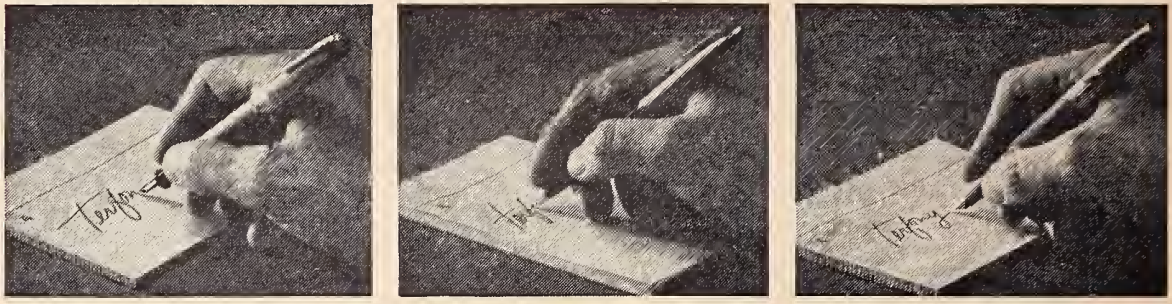
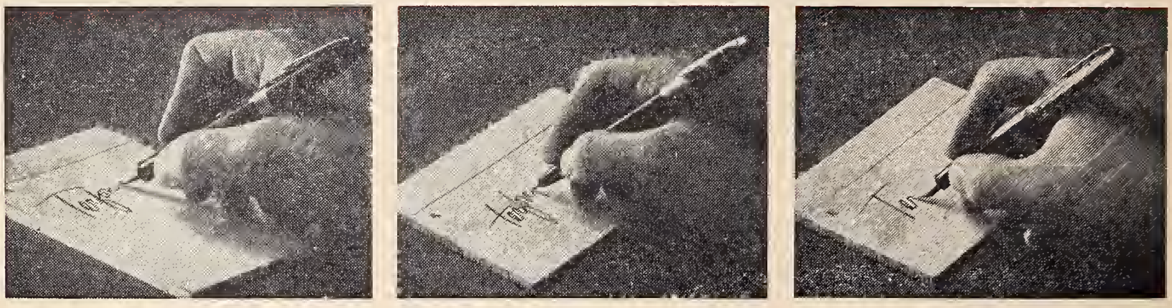
S-419



more and more physicians are prescribing this triple sulfa



TERFONYL

Squibb Triple Sulfas (Trisulfapyrimidines)

Clinical experience continues to prove that TERFONYL provides many special advantages fundamental to successful antibacterial therapy.

• specificity for a wide range of organisms • superinfection rarely encountered • soluble in urine through entire physiologic pH range • minimal disturbance of intestinal flora • excellent diffusion throughout tissues • readily crosses blood-brain barrier • sustained therapeutic blood levels • extremely low incidence of sensitization

SUPPLY: Tablets, 0.5 gm. • Suspension, raspberry flavored, 0.5 gm. per teaspoonful (5cc.).

SQUIBB *Squibb Quality—the Priceless Ingredient*

'TERFONYL'® IS A SQUIBB TRADEMARK

in every arthritic state
long-term therapy
with maximum relief of pain
__without__ __steroids__

Buffered Pabirin® *Tablets*
improved salicylate therapy

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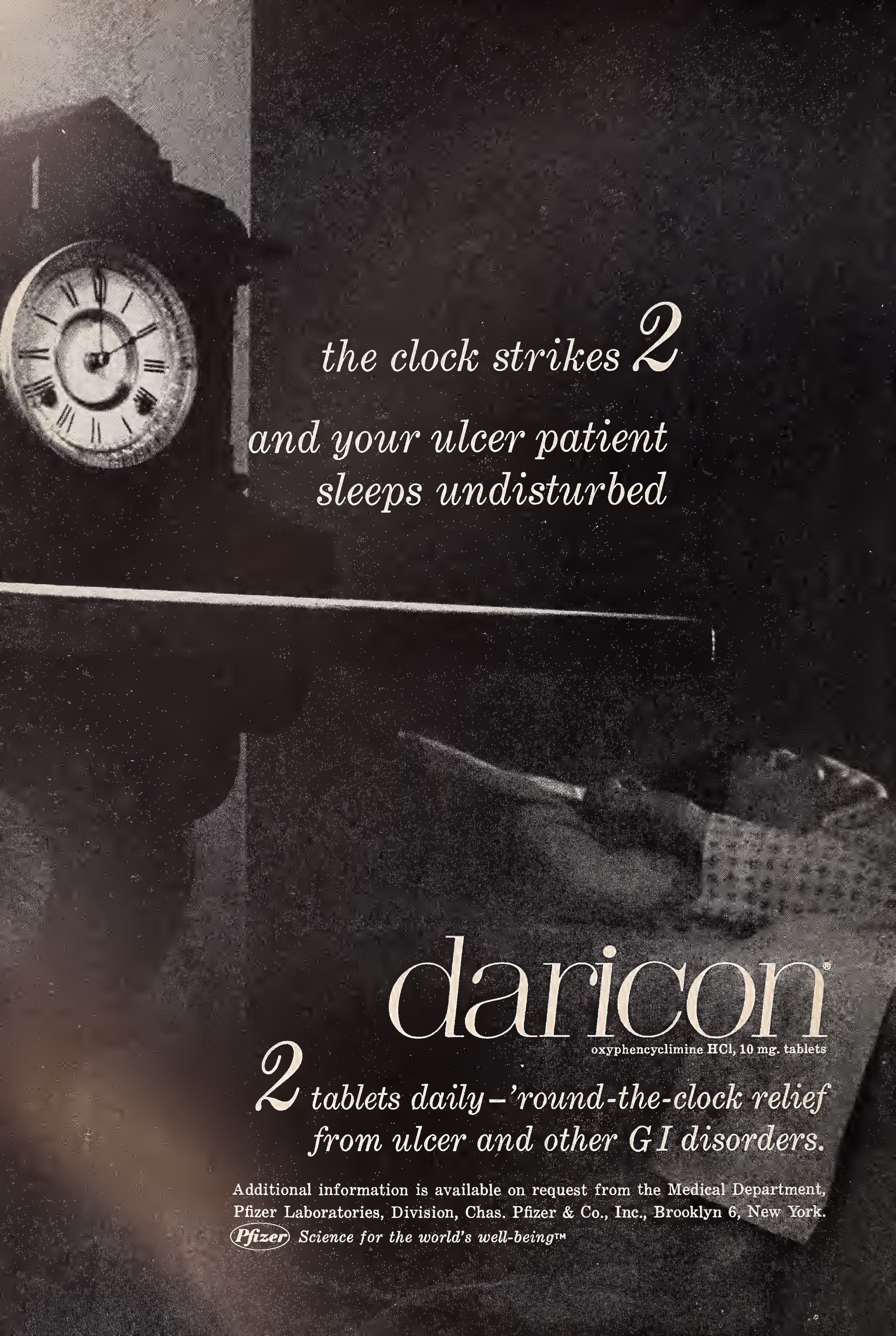

the clock strikes 2

and your ulcer patient sleeps undisturbed

daricon®

oxyphencyclimine HCl, 10 mg. tablets

2 tablets daily–'round-the-clock relief from ulcer and other GI disorders.

Additional information is available on request from the Medical Department, Pfizer Laboratories, Division, Chas. Pfizer & Co., Inc., Brooklyn 6, New York.

Pfizer *Science for the world's well-being*™

Synonyms for Pain Relief...

'TABLOID'

'EMPIRIN' COMPOUND®

Acetophenetidin	gr. 2½
Acetylsalicylic Acid	gr. 3½
Caffeine	gr. ½

'TABLOID'

'EMPIRIN' COMPOUND® WITH CODEINE PHOSPHATE*

No. 1

Acetophenetidin	gr. 2½
Acetylsalicylic Acid	gr. 3½
Caffeine	gr. ½
Codeine Phosphate	gr. ⅛

No. 2

Acetophenetidin	gr. 2½
Acetylsalicylic Acid	gr. 3½
Caffeine	gr. ½
Codeine Phosphate	gr. ¼

No. 3

Acetophenetidin	gr. 2½
Acetylsalicylic Acid	gr. 3½
Caffeine	gr. ½
Codeine Phosphate	gr. ½

No. 4

Acetophenetidin	gr. 2½
Acetylsalicylic Acid	gr. 3½
Caffeine	gr. ½
Codeine Phosphate	gr. 1

*Subject to Federal Narcotic Regulations

...providing the desired gradation of potencies for relief of varying intensities of pain

IN

simple headache
rheumatic conditions
arthralgias
myalgias
common cold
toothache
earache
dysmenorrhea
neuralgia
minor trauma
tension headache
premenstrual tension
minor surgery
post-partum pain
trauma
organic disease
neoplasm
muscle spasm
colic
migraine
musculo-skeletal pains
postdental surgery
post-partum involution
fractures
synovitis/bursitis

relief of pain
of all degrees of
severity up to
that which
requires morphine

AND IN

fevers
dry,
unproductive coughs

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Your experience and trust throughout the years have established the wide use of the 'Empirin' family in medical practice—dependable analgesics for the effective relief of pain, fever, and cough—with safety.

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Triumph over PAIN
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100 'TABLOID' 'Empirin' Compound
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BURROUGHS WELLCOME & CO. (U.S.A.) INC.
Tuckahoe, New York

ONE *and only ONE*

***Timed* AMO*dex* CAPSULE**

PER

DAY *will economically*

control appetite in weight reduction or relieve the nervous symptoms of anxiety and the underlying depression.

6-10 HOURS SUSTAINED THERAPY

Timed AMO*dex CAPSULES* (Testagar) furnish a controlled uniform action. The medications provide prolonged, continuous therapeutic effect from active ingredients over a period of 6 to 10 hours.

Following ingestion of one *Timed* AMO*dex CAPSULE,* small amounts of the medication are released immediately.

Each *Timed* AMO*dex CAPSULE* contains a daily therapeutic dose of:

Dextro-amphetamine hydrochloride	15 mg.,
Amobarbital	60 mg.

PROTRACTED THERAPEUTIC EFFECT

Before the development of *Timed* AMO*dex* (Testagar) the usual dose of Dextro-amphetamine hydrochloride, for the control of appetite, was one 5 mg. tablet two or three times a day. The usual dose of Amobarbital ranged from 20 to 40 mg., two or three times a day. On such a dosage regimen the absorption of the drugs, after ingestion, takes place quite rapidly. The therapeutic activity occurs within one-half to one hour. When the therapeutic peak is reached, a gradual decline takes place. At this point, the patient should receive another dose of medication . . . the cycle is then repeated.

Patients frequently fail to follow the physician's instructions. They take medication at irregular intervals. When this occurs with drugs such as dextro-amphetamine sulfate, phosphate or hydrochloride, excitation may result. A balanced combination of Dextro-amphetamine hydrochloride, **the preferred salt,** plus a balanced daily dose of Amobarbital will give the expected therapeutic results *without* excitation.

Timed AMO*dex,* after ingestion, releases Dextro-amphetamine Hydrochloride and Amobarbital steadily and uniformly over a period of 6 to 10 hours. Therefore, the physician may dispense with the usual dosage schedule thereby *attaining better control of therapy.* The patient will receive the benefits of even and sustained therapeutic effects. Side reactions such as anxiety and excitation are greatly minimized.

AMO*dex* ADVANTAGES

- HIGH-LEVEL ANOREXIGENIC ACTIVITY WITHOUT NERVOUS EXCITATION
- SMOOTH, UNIFORM ACTION
- THERAPEUTIC EFFECT LASTING 6 TO 10 HOURS
- ONLY ONE DOSE DAILY
- CLINICALLY ECONOMICAL TO THE PATIENT

ACTION AND USES

Timed AMO*dex CAPSULES* (Testagar) supply the antidepressant and mood-elevating effects of Dextro-amphetamine hydrochloride and the calming action of Amobarbital. *Timed* AMO*dex* elevates the mood, relieves nervous tension, restores emotional stability and the capacity for mental and physical effort.

INDICATIONS

Timed AMO*dex* is the preferred treatment in anxiety states and in the management of obesity. *Timed* AMO*dex* may also be used in the treatment of Depressive states, Alcoholism, Nausea and Vomiting of Pregnancy.

DOSAGE The Daily Dose of *Timed* AMO*dex* (Testagar) IS ONE CAPSULE ON ARISING OR AT BREAKFAST.

SUPPLIED Bottles of 100 and 1000 capsules, available at all pharmacies. Also supplied in half strength as *Timed* AMO*dex,* Jr.

Timed AMO*dex CAPSULES* are manufactured under these patent numbers:
2,736,682 – 2,809,916
2,809,917 – 2,809,918
Which provide prolonged, continuous therapeutic effect over a period of 6-10 hours

SAMPLES AND LITERATURE UPON REQUEST

Testagar & co., inc. 1354 W. Lafayette Blvd. Detroit 26, Michigan

"I feel tired even after a full night's sleep."

Restores normal vitality in emotional fatigue

Deprol relieves undue tiredness, apathy and depressed moods as it calms anxiety – without the risk of liver damage or extrapyramidal symptoms frequently reported with energizers or phenothiazines.

Emotional or nervous fatigue—undue tiredness, apathy, lethargy and listlessness—cuts sharply into the patient's usual physical and mental productivity. It is one of the most common conditions seen in every medical practice. Untreated, emotional fatigue may mushroom into a depressive episode, anxiety state, chronic fatigue or a mixture of these disorders.

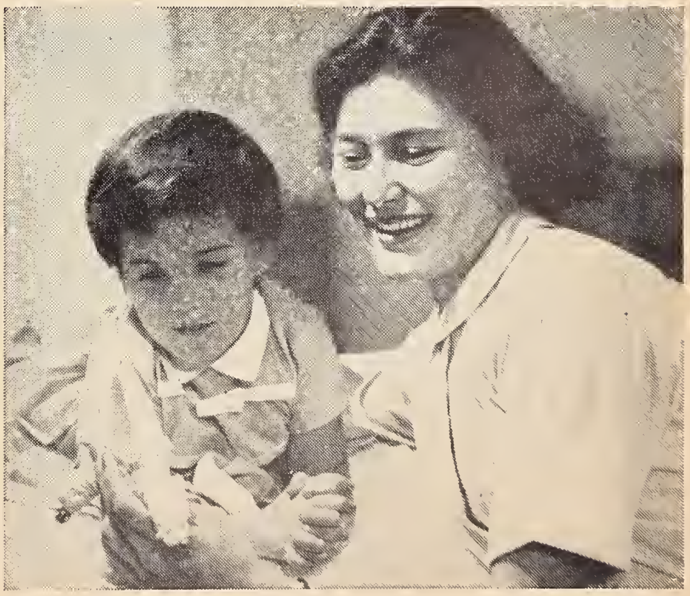
Deprol acts fast to relieve emotional fatigue. It overcomes tiredness and lethargy, apathy and listlessness, thus restoring normal vitality and interest before the fatigue deepens. On Deprol, improvement is achieved without producing liver toxicity, hypotension, psychotic reactions, changes in sexual function or Parkinson-like reactions associated with energizers or phenothiazines.

BIBLIOGRAPHY (10 clinical studies, 714 patients):

1. Alexander, L. (35 patients): Chemotherapy of depression—Use of meprobamate combined with benactyzine (2-diethylaminoethyl benzilate) hydrochloride. J.A.M.A. **166**:1019, March 1, 1958. **2.** Bateman, J. C. and Carlton, H. N. (50 patients): Deprol as adjunctive therapy for patients with advanced cancer. Antibiotic Med. & Clin. Therapy. In press, 1959. **3.** Bell, J. L., Tauber, H., Santy, A. and Pulito, F. (77 patients): Treatment of depressive states in office practice. Dis. Nerv. System **20**:263, June 1959. **4.** Breitner, C. (31 patients): On mental depressions. Dis. Nerv. System **20**:142, (Section Two), May 1959. **5.** McClure, C. W., Papas, P. N., Speare, G. S., Palmer, E., Slattery, J. J., Konefal, S. H., Henken, B. S., Wood, C. A. and Ceresia, G. B. (128 patients): Treatment of depression—New technics and therapy. Am. Pract. & Digest Treat. **10**:1525, Sept. 1959. **6.** Pennington, V. M. (135 patients): Meprobamate-benactyzine (Deprol) in the treatment of chronic brain syndrome, schizophrenia and senility. J. Am. Geriatrics Soc. **7**:656, Aug. 1959. **7.** Rickels, K. and Ewing, J. H. (35 patients): Deprol in depressive conditions. Dis. Nerv. System **20**:364, (Section One), Aug. 1959. **8.** Ruchwarger, A. (87 patients): Use of Deprol (meprobamate combined with benactyzine hydrochloride) in the office treatment of depression. M. Ann. District of Columbia **28**:438, Aug. 1959. **9.** Settel, E. (52 patients): Treatment of depression in the elderly with a meprobamate-benactyzine hydrochloride combination. Antibiotic Med. & Clin. Therapy. In press, 1959. **10.** Splitter, S. R. (84 patients): The care of the anxious and the depressed. Submitted for publication, 1959.

and

11. Laughlin, H. P.: The Neuroses in Clinical Practice, Saunders, Philadelphia, 1956, pp. 448-481.



▲Deprol▲®

Dosage: Usual starting dose is 1 tablet q.i.d. When necessary, this may be gradually increased up to 3 tablets q.i.d.
Composition: 1 mg. 2-diethylaminoethyl benzilate hydrochloride (benactyzine HCl) and 400 mg. meprobamate.
Supplied: Bottles of 50 light-pink, scored tablets.

CD-463

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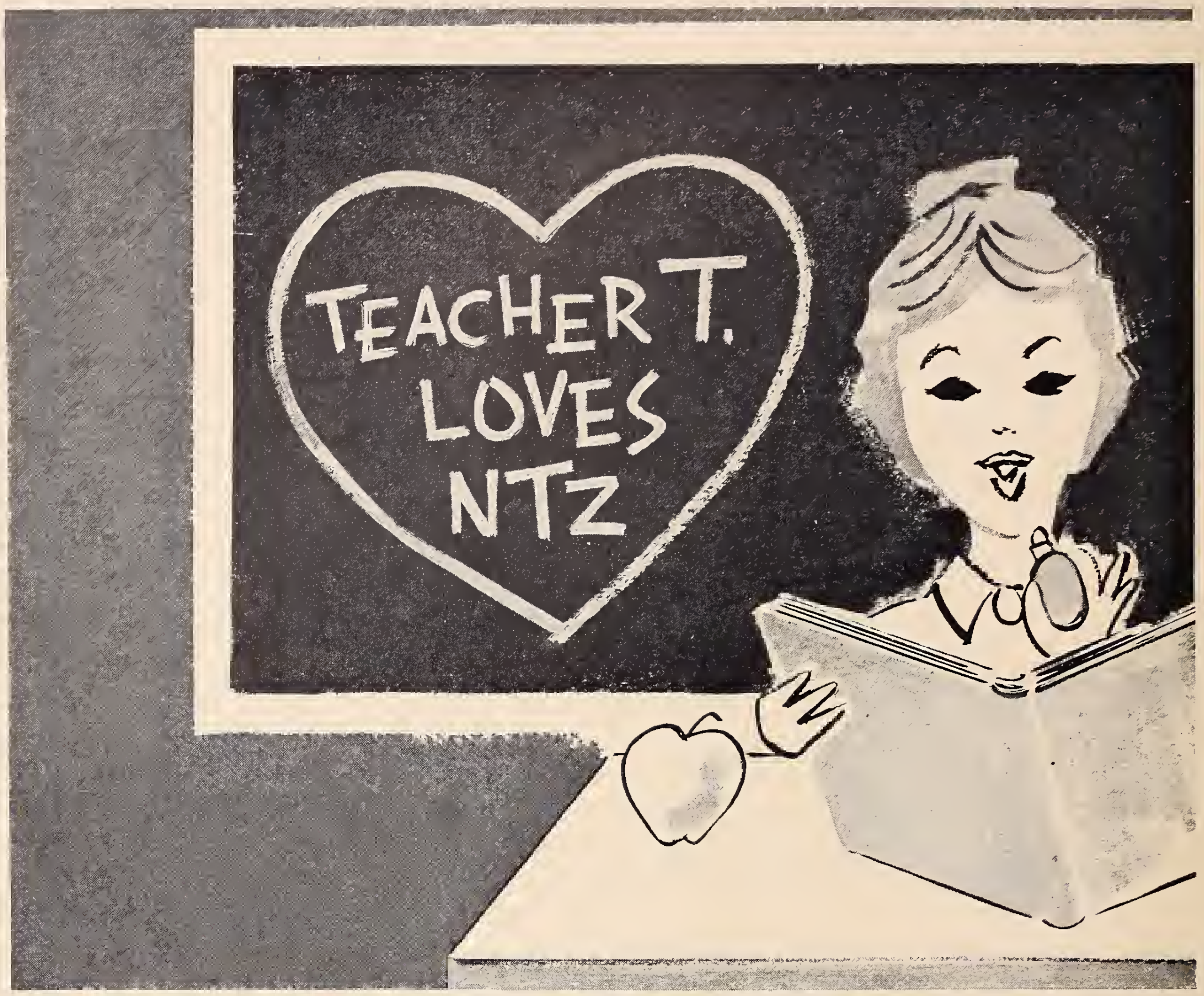

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Neo-Synephrine® HCl, 0.5%
—unexcelled decongestant—

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Potentiated Relief for Colds... Sinusitis... Hay Fever

Announcing an Old Product
THAT STILL IS THE MOST IMPROVED AGENT FOR BASIC DRUG THERAPY IN HYPERTENSION

Only time and clinical acceptance truly define whether a drug is safe and effective. Of the many Rauwolfia compounds, there is one alkaloidal fraction capable of producing antihypertensive benefits with minimal side effects, purified alseroxylon complex (RAUTENSIN®).[1-6] This compound is less likely to cause such side effects as mental depression, lethargy, listlessness, and drowsiness consistently reported with reserpine.

IN MILD HYPERTENSION

RAUTENSIN®

(Tablets containing 2 mg. purified alseroxylon complex)

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(Tablets containing 1 mg. Rautensin and 3 mg. alkavervir)

Rautensin bibliography: 1. WRIGHT, W. T., JR.; POKORY, C., AND FOSTER, T.: AM. PRACT. & DIGEST. TREAT. 7:1992, 1956. 2. SUCKLE, E.: GERIATRICS 11:509, 1956. 3. FINCH, W. J.: J. OKLAHOMA M.A. 50:259, 1957. 4. TERMAN, L. A.: ILLINOIS M. J. 3:67, 1957. 5. GIFFORD, R. W.: J. ARKANSAS M. SOC. 55:31, 1958. 6. FORD, R. V., AND MOYER, J. H.: POSTGRAD. MED. 23-41, 1958.

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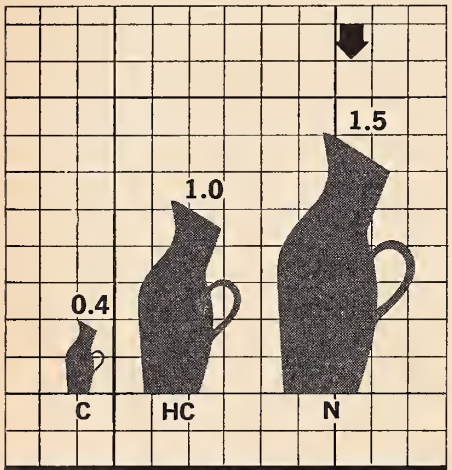
more closely approaches the ideal diuretic

Naturētin

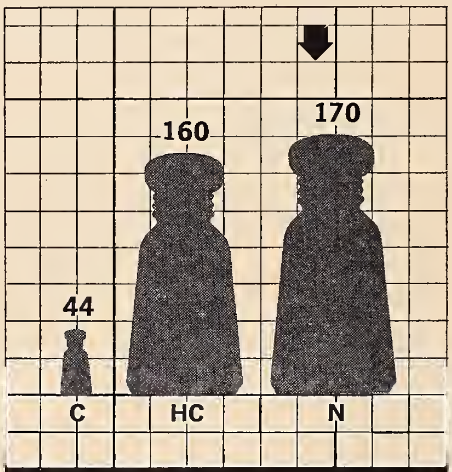
Squibb Benzydroflumethiazide

"When compared to other members of this heterocyclic group of compounds, this drug [NATURETIN] shows a significantly increased natriuresis and decreased loss of potassium and bicarbonate. In this respect it more closely approaches a natural or 'ideal diuretic.' It is effective upon continuous administration and causes no significant serum biochemical changes. It is effective in a wide variety of edematous and hypertensive states and represents a significant advance in diuretic therapy." Ford, R.V.: *Pharmacological observations on a more potent benzothiadiazine diuretic; accepted for publication by the American Heart Journal.*

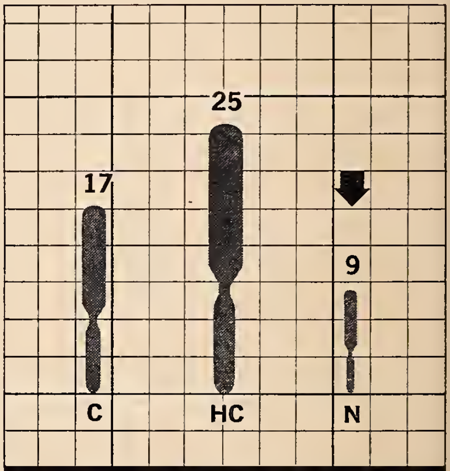
Comparison of electrolyte excretion pattern for the 24 hours following typical doses of chlorothiazide, hydrochlorothiazide, and Naturetin[1]



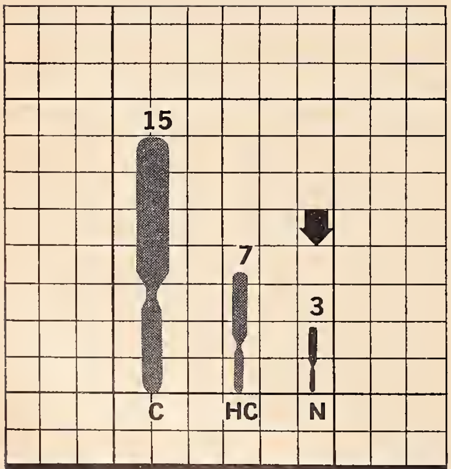
Urinary Volume (liters)
significantly increased
with Naturetin



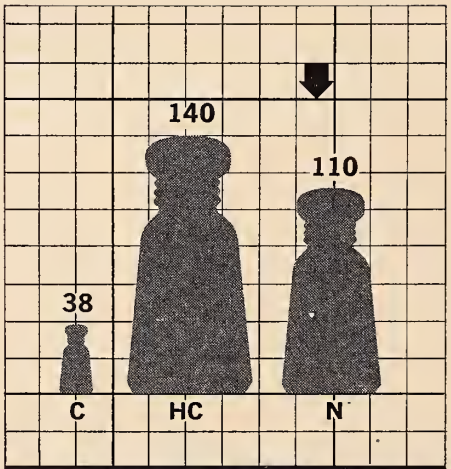
Natriuresis (mEq./24 hr.)
sodium excretion significantly
increased with Naturetin



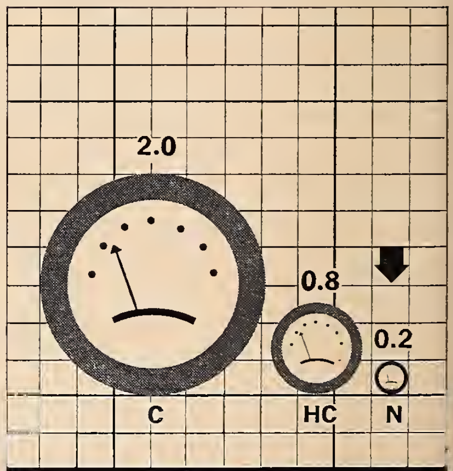
Potassium Excretion
(mEq./24 hr.)
least with Naturetin



Bicarbonate Excretion
(mEq./24 hr.)
least with Naturetin



Chloride Excretion
(mEq./24 hr.)
marked increases



Urinary pH
least increase with Naturetin

Typical Doses: Chlorothiazide—1,000 mg.; Hydrochlorothiazide—50 mg.; Naturetin (Benzydroflumethiazide)—5 mg.

[1] *Adapted from: Ford, R. V., Squibb Clin. Res. Notes 2:1 (Dec.) 1959*

A single 5 mg. tablet once a day provides all these advantages[2]

- prolonged action – in excess of 18 hours
- convenient once-a-day dosage
- low daily dosage – more economical for the patient
- no significant alteration in normal electrolyte excretion pattern
- repetitively effective as a diuretic and antihypertensive
- greater potency mg. for mg.—more than 100 times as potent as chlorothiazide
- potency maintained with continued administration
- low toxicity – few side effects – low salt diets not necessary
- comparative studies with chlorothiazide, hydrochlorothiazide, and Naturetin disclose that smallest doses of Naturetin produce greater weight loss per day
- in hypertension, Naturetin, alone or in combination with other antihypertensives, produces significant decreases in mean blood pressure and other favorable clinical effects
- purpura and agranulocytosis not observed
- allergic reactions rarely observed

[2]Reports (1959) to the Squibb Institute for Medical Research.

Naturētin —*Indications:* in control of edema when diuresis is required, in congestive heart failure, n the premenstrual syndrome, nephrosis and nephritis, cirrhosis with ascites, edema induced by drugs (certain steroids); in the management of hypertension, used alone, combined with Raudixin (Squibb Rauwolfia Serpentina Whole Root), or with other antihypertensive drugs, such as ganglionic blocking agents.

Contraindications: none, except in complete renal shutdown.

Precautions: when Naturetin is added to an antihypertensive regimen including hydralazine, veratrum, and/or ganglionic blocking agents, immediate reduction must be made in the dosage for all preparations; the dosage for ganglionic blocking agents must be decreased by 50% to avoid a precipitous drop in blood pressure. This also applies if these hypotensive drugs are added to an established Naturetin regimen . . . in hypochloremic alkalosis with or without hypokalemia . . . in cirrhotic patients or those on digitalis therapy when reductions in serum potassium are noted . . . in diabetic patients or those predisposed to diabetes . . . when increased uric acid concentrations are noted . . . when signs—leg or abdominal cramps, pruritus, paresthesia, rash—suggestive of hypersensitivity, are noted.

Naturētin —*Dosage: in edema,* average dose, 5 mg., once daily, preferably in the morning; to initiate therapy, up to 20 mg., once daily or in divided doses; for maintenance, 2.5 to 5.0 mg., daily in a single dose. *In hypertension:* suggested initial dose, 5 to 20 mg. daily; for maintenance, 2.5 to 15 mg. daily, depending on the individual response of the patient. When Naturetin is added to an antihypertensive regimen with other agents, lower maintenance doses of each drug should be used.

Naturētin —*Supplied:* tablets of 2.5 mg. and 5 mg. (scored).

RAUDIXIN'® AND 'NATURETIN' ARE SQUIBB TRADEMARKS.

SQUIBB

Squibb Quality—
the Priceless
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Rx
Naturetin 5mg.
Disp. #30
Sig: 1 each
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Butazolidin®
brand of phenylbutazone

in arthritis and allied disorders

proved by a decade
of experience

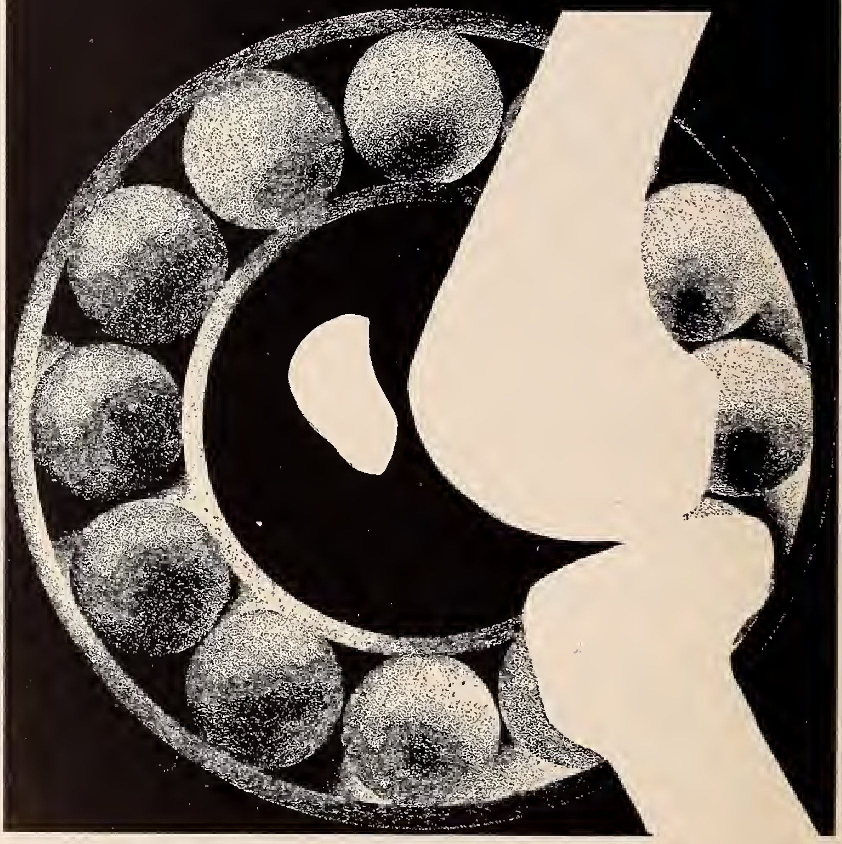
Ten years of experience in countless cases—more than 1700 published reports—have now established the eminence of Butazolidin among the potent non-hormonal antiarthritic agents.

Repeatedly it has been demonstrated that Butazolidin:
Within 24 to 72 hours produces striking relief of pain.
Within 5 to 10 days affords a marked improvement in mobility and a significant subsidence of inflammation with reduction of swelling and absorption of effusion.

Even when administered over months or years Butazolidin does not provoke tolerance nor produce signs of hormonal imbalance.

Butazolidin® brand of phenylbutazone: Red-coated tablets of 100 mg.
Butazolidin® Alka: Capsules containing Butazolidin® 100 mg.; dried aluminum hydroxide gel 100 mg.; magnesium trisilicate 150 mg.; homatropine methylbromide 1.25 mg.

Geigy, Ardsley, New York



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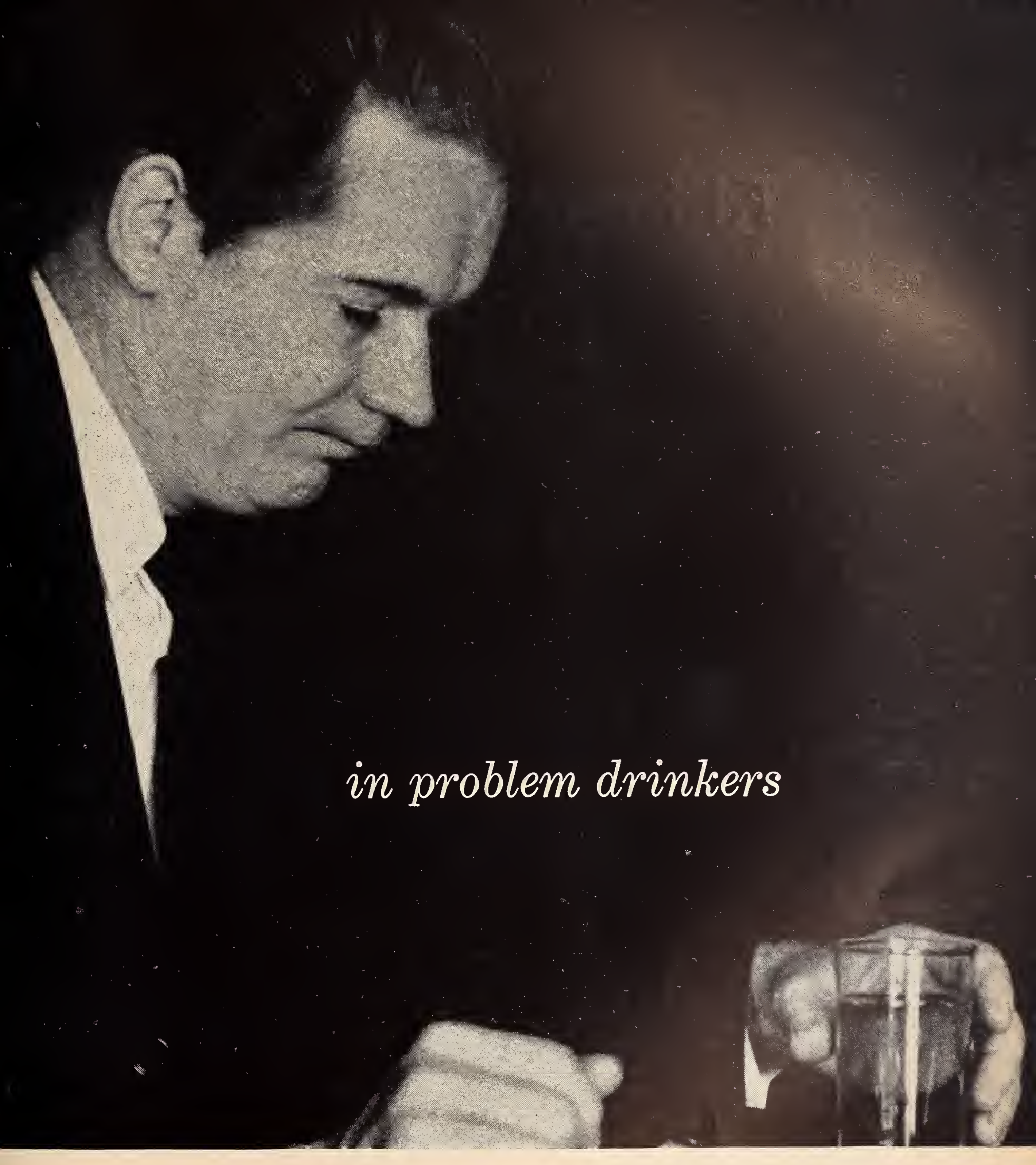

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dispels tension . . .
maintains tranquility

When tension and anxiety "drive him to drink," the problem drinker often finds that VISTARIL, by maintaining tranquility, restores perspective and helps him accept counsel more readily.

VISTARIL has demonstrated a wide margin of safety even in large doses (300-400 mg. daily) over prolonged periods. Clinical studies of alcoholism have shown that VISTARIL produces no significant depression of blood pressure, pulse rate, or respiration in chronic drinkers.

Capsules—25, 50, and 100 mg. *Parenteral Solution* (as the HCl)—25 mg. per cc., 10 cc. vials and 2 cc. Steraject® Cartridges; 50 mg. per cc., 2 cc. ampules.

Professional literature available on request from the Medical Department, Pfizer Laboratories, Div., Chas. Pfizer & Co., Inc., Brooklyn 6, New York

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51 to 49...it's a boy!

94 to 6 BONADOXIN® stops morning sickness

When she asks "Doctor, what will it be?" you can either flip a coin or point out that 51.25% births are male.[1] But when she mentions morning sickness, your course is clear: BONADOXIN.

For, in a series of 766 cases of morning sickness, seven investigators report excellent to good results in 94%.[2] More than 60 million of these tiny tablets have been taken. The formula: 25 mg. Meclizine HCl (for antinauseant action) and 50 mg. Pyridoxine HCl (for metabolic replacement). Just one tablet the night before is usually enough.

BONADOXIN—DROPS and Tablets—are also effective in infant colic, motion sickness, labyrinthitis, Meniere's syndrome and for relieving the nausea and vomiting associated with anesthesia and radiation sickness. See PDR p. 795.

1. Projection from Vital Statistics, U.S. Government Dept. HEW, Vol. 48, No. 14, 1958, p. 398.
2. Modell, W.: Drugs of Choice 1958-1959, St. Louis, C. V. Mosby Company, 1958, p. 347.

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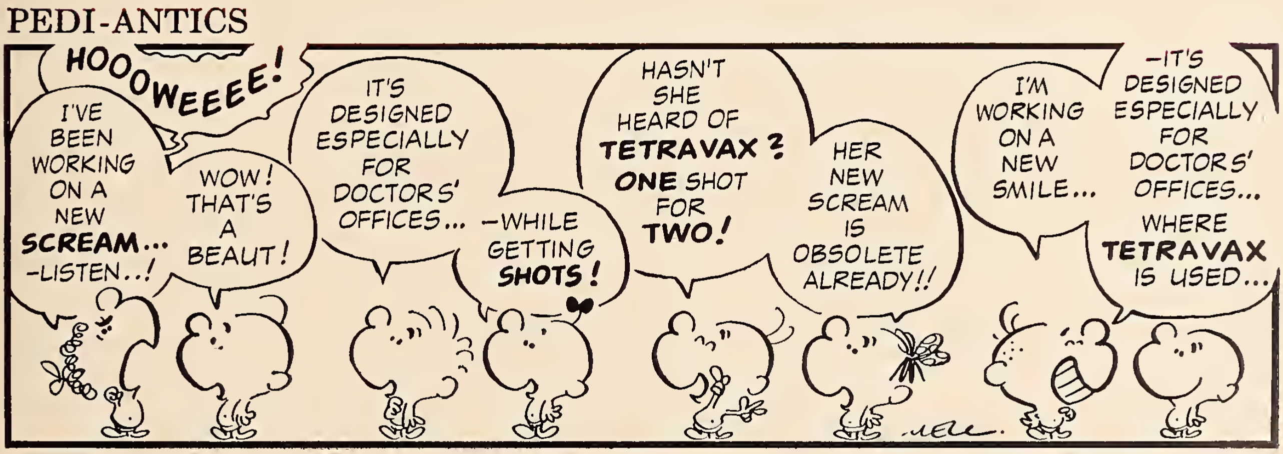
FOR SIMULTANEOUS IMMUNIZATION AGAINST 4 DISEASES:

Poliomyelitis-Diphtheria-Pertussis-Tetanus


PEDI-ANTICS
HOOOWEEEEE!
I'VE BEEN WORKING ON A NEW SCREAM... -LISTEN..!
WOW! THAT'S A BEAUT!
IT'S DESIGNED ESPECIALLY FOR DOCTORS' OFFICES...
-WHILE GETTING SHOTS!
HASN'T SHE HEARD OF TETRAVAX? ONE SHOT FOR TWO!
HER NEW SCREAM IS OBSOLETE ALREADY!!
I'M WORKING ON A NEW SMILE...
-IT'S DESIGNED ESPECIALLY FOR DOCTORS' OFFICES... WHERE TETRAVAX IS USED...

TETRAVAX®

DIPHTHERIA AND TETANUS TOXOIDS WITH PERTUSSIS AND POLIOMYELITIS VACCINES

now you can immunize against more diseases...with fewer injections

Dose: 1 cc.
Supplied: 9 cc. vials in *clear plastic* cartons. Package circular and material in vial can be examined without damaging carton. Expiration date is on vial for checking even if carton is discarded.

For additional information, write Professional Services, Merck Sharp & Dohme, West Point, Pa.

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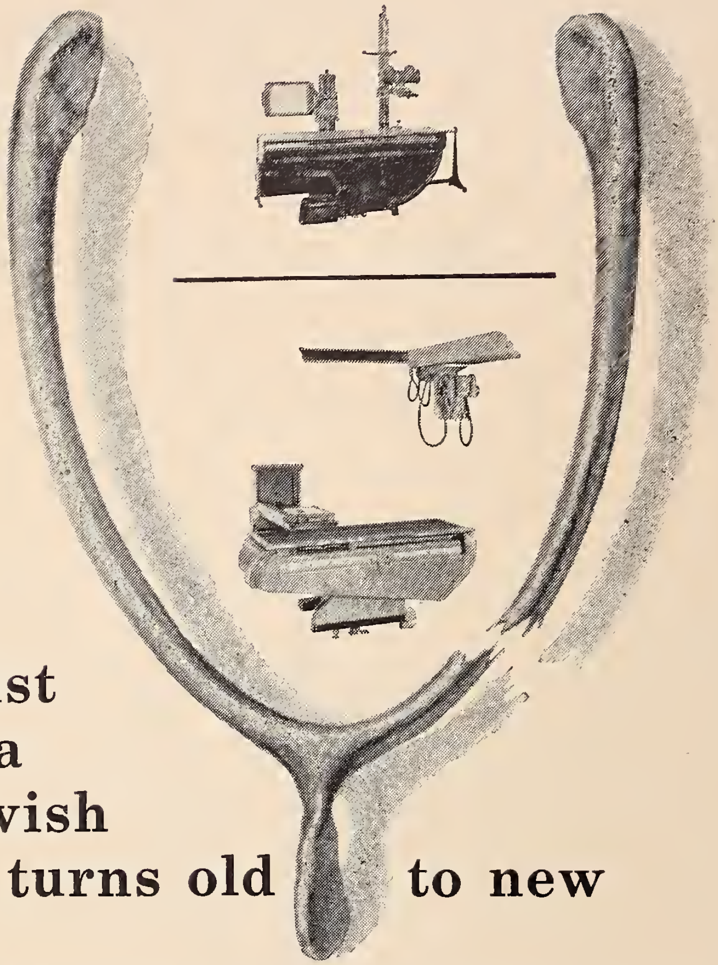

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to prevent the sequelae of u.r.i. ... and relieve the symptom complex

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(1) Estimate based on epidemiologic study by Van Volkenburgh, V. A., and Frost, W. H.: Am. J. Hygiene 71:122, Jan. 1933.

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1. Cook, J.E., Briggs, G.W., and Hindley, F.W.: Chronic Amebiasis and the Need for a Diagnostic Profile, Am. Pract. and Dig. of Treat. *6*:1821 (Dec., 1955).
2. Rinehart, R.E., and Marcus, H.: Incidence of Amebiasis in Healthy Individuals, Clinic Patients and Those with Rheumatoid Arthritis, Northwest Med., *54*:708 (July, 1955).
3. Webster, B.H.: Amebiasis, a Disease of Multiple Manifestations, Am. Pract. and Dig. of Treat. *9*:897 (June, 1958).

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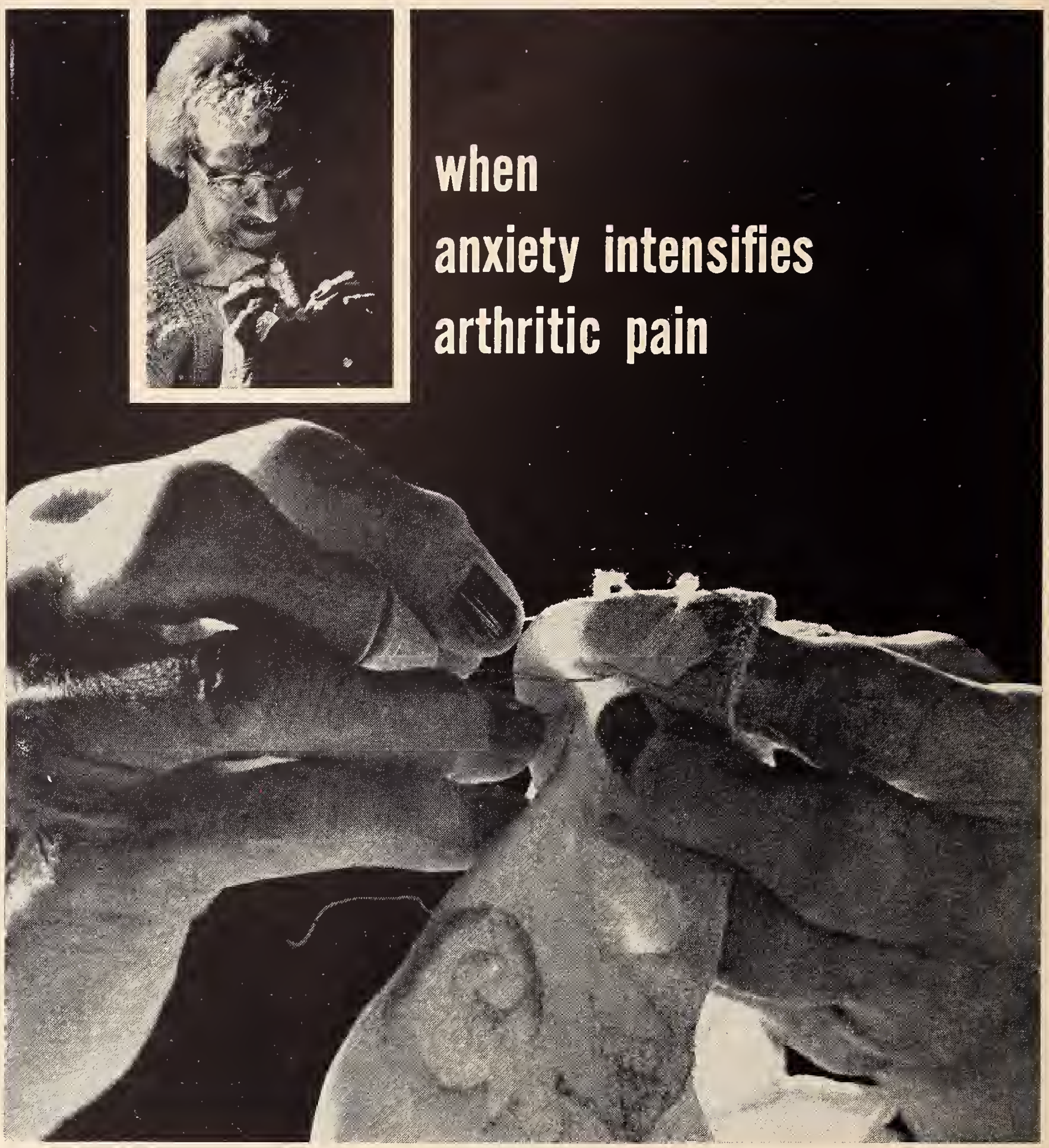

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Original Articles

ARIZONA MEDICINE

VOL. 17, NO. 3 MARCH, 1960

The Hyperventilation Syndrome*

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THE hyperventilation syndrome is one of the conditions a physician may encounter most frequently; and yet it is not commonly recognized. Everyone hyperventilates at times, either from overstimulation of the respiratory center associated with mental excitation or from reflexes initiated by pain, heat, or cold. From these more normal responses of normal persons, the incidence of the hyperventilation syndrome increases through the ranks of stable subjects living under a temporary strain, such as combat soldiers, to those individuals who usually tolerate stresses poorly. The less stable group includes a variety of inadequate and psychoneurotic patients who are a significant part of any medical practice.

The incidence of hyperventilation might be considered low and its clinical significance unimportant, if one judged by the scant attention given to it in medical literature. Actually, however, the incidence is high. Estimates have been made that it occurs in from 5 to 10 per cent of patients who visit the office of a general practitioner.(1, 2) The incidence of hyperventilation syndrome among women is said to be three times greater than among men.(3) The respiratory alkalosis that overbreathing induces is the basis for many symptoms we loosely refer to as "functional." If we physicians stop with this diagnosis, not pursuing the mechanism by which symptoms occur, we fail to perform a useful service. A demonstration of the mechanism through which symptoms have come about can add noticeably to the satisfaction of our patients.

The hyperventilation syndrome occurs when an increased rate or depth of respiration brings about a lowering in the level of alveolar carbon dioxide. This reduction in carbon dioxide in turn sets off a train of transitory chemical changes that result in widespread symptoms.

The association of hyperventilation with emotional disorders and its effects upon the human body have been referred to in historical records for centuries. Early French hypnotists utilized hyperventilation to induce so-called hysterical seizures. In long past naval days sailors undergoing flogging would hyperventilate to hasten the unconsciousness that terminated the punishment.(4) Sighing often has occurred with emotional stress, as so excellently described by DuLaurens in 1559.(5)

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*Read at the meeting of the Arizona Medical Association, Chandler, Arizona, April 28 to May 2, 1959.

†The Mayo Foundation, Rochester, Minnesota, is a part of the Graduate School of the University of Minnesota.

"Melancholoke folke are commonly giuen to sigh, because the minde being possessed with great varietie and store of foolish apparitions, doth not remember or suffer the partie to be at leisure to breathe according to the necessitie of nature, whcreupon she is constrained at once to sup vp as much ayre, as otherwise would srue for two or three time; and this great draught of breath is called by name sighing, which as it were a reduplicating of the ordinary manner of breathing. In this order it falleth out with louers, and all those which are very busily occupied in some deep contemplation. Sillie fooles likewise which fall into wonder at the sight of any beautifull and goodly picture, are constrained to giue a great sigh, their will (which is the efficient cause of breathing) being altogether distracted, and wholly possessed with the sight of the image."

Hyperventilation may result from organic brain damage, usually as a sequel to encephalitis. This form of the disorder is relatively uncommon and is not one I wish to discuss today. Another type of hyperventilation occurs in persons exposed to cold, which stimulates the respiratory center. Also hyperventilation may occur in persons unadapted to rarefied atmosphere, who overbreathe in an attempt to obtain adequate oxygen at such low atmospheric pressures. An excessive loss of carbon dioxide occurs as such subjects endeavor to get sufficient oxygen. Hyperventilation may occur when a repetitious physical activity imposes a mechanized regulation upon the respiratory effort. For example, it occurs in the inexperienced swimmer who gasps each time his swimming stroke permits an inhalation. It occurs also in the patient with a coughing paroxysm as he repeatedly gasps quantities of air and in so doing brings on respiratory alkalosis. We all have observed the patient who after several deep breaths in the course of a physical examination comments that he is lightheaded.

I should like to consider the more common forms of hyperventilation occurring in persons with no organic disease as a contributing factor. Hyperventilation may occur as a repeated sighing and yawning, particularly in an excessively anxious person. It may occur as a panting type of acute respiratory distress among apprehensive patients who suspect that something dire is happening. This form of hyperventilation causes many symptoms of an acute anxiety attack. Of greatest significance is that form of chronic hyperventilation occurring in persons who perhaps fail to recognize that they breathe more rapidly or more deeply or sigh more frequently than is normal. Such accelerated respiratory activity goes unrecognized by many in whom it is present.

Mechanism of the Syndrome

Whatever the process by which the exchange of air in the lung may be accelerated in the hyperventilation syndrome, the net result is a loss of carbon dioxide from the alveoli of the lungs. Blood flowing through the lungs releases carbon dioxide continually into the alveoli. The constant aeration of the alveoli throws off this carbon dioxide to maintain normally a partial-pressure level of approximately 40 to 45 millimeters of mercury in the alveolar gas. With hyperventilation this level of carbon dioxide may be lowered quickly to as little as 15 mm. partial pressure, thereby inducing respiratory alkalosis. Respiratory alkalosis is produced by an alteration in the usual 20:1 ratio of sodium bicarbonate to carbonic acid in the blood. The pH of the blood, which normally would be near 7.38, may then be higher than 7.60. Shock and Hastings(6) demonstrated the effect of hyperventilation on the pH of the blood (Fig. 1). In normal subjects 20 minutes of hyperventilation brought a marked increase in the pH of the serum and likewise brought a marked lowering in the partial pressure of carbon dioxide in the blood.

Alkalosis curtails the amount of oxygen available in all portions of the body. A brief review of the physiology of oxygen transport will make clear why this is so. Hemoglobin carries oxygen in chemical combination.(7) Variations in the oxygen pressure to which hemoglobin is exposed determine the proportion of oxygen chemically bound to hemoglobin. Barcroft(8) has illustrated the pattern in which such a union takes place (Fig. 2). It may be noted that normal conditions in the lungs are highly favorable for the union of hemoglobin with oxygen, inasmuch as the partial pressure of oxygen in alveolar air is approximately 100 mm. Hg. If the alveolar oxygen pressure falls to 40 there is still a generous saturation of the hemoglobin with oxygen.

Now it is equally apparent from this curve that conditions are unsatisfactory for the reverse reaction ($HbO_2 \rightarrow Hb + O_2$) within the body tissues where the partial pressure of oxygen ranges below 40, which is the level usually observed in mixed venous blood. If such a curve were indicative of the dissociation of oxygen from hemoglobin in the tissues, only a small amount of oxygen would be released, even in tissues having a low oxygen pressure.

Barcroft(8) found certain factors that favor the dissociation of oxyhemoglobin. Temperature, the presence of sodium or potassium ions, and variations in the concentration of hemoglobin have minor effects on dissociation. The most important influence favoring dissociation, however, he found to be a result of increase in the concentration of carbon dioxide (Fig. 3), with a resulting decrease in the pH of the medium in which the reaction occurred. His experimental use of acids other than carbonic acid to establish similar changes in the pH of the medium brought about a similar effect on the curve of dissociation of oxyhemoglobin. An adequate concentration of carbon dioxide in the tissues appears to be a major factor in forcing hemoglobin to relinquish oxygen.

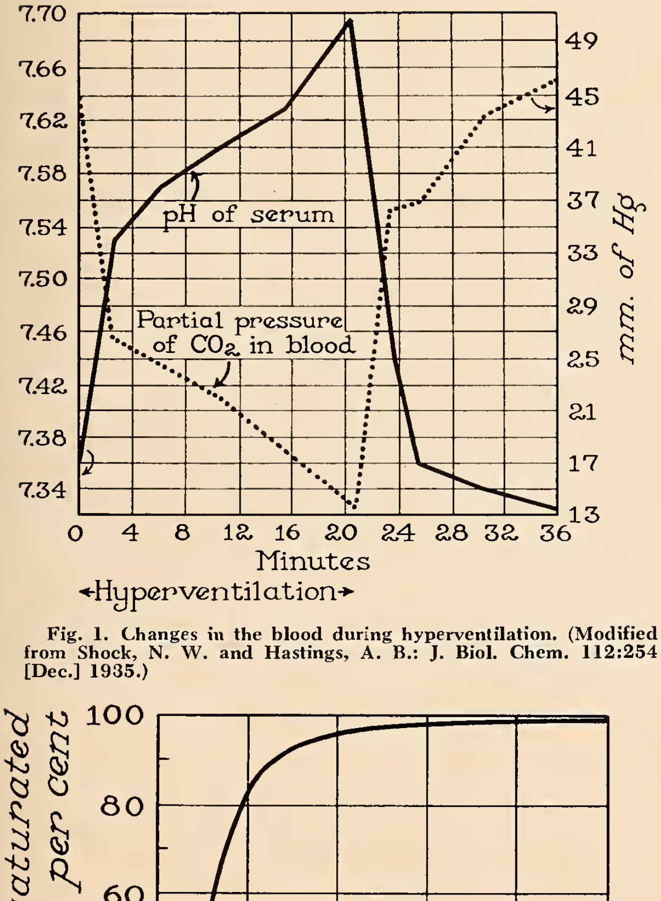

Fig. 1. Changes in the blood during hyperventilation. (Modified from Shock, N. W. and Hastings, A. B.: J. Biol. Chem. 112:254 [Dec.] 1935.)

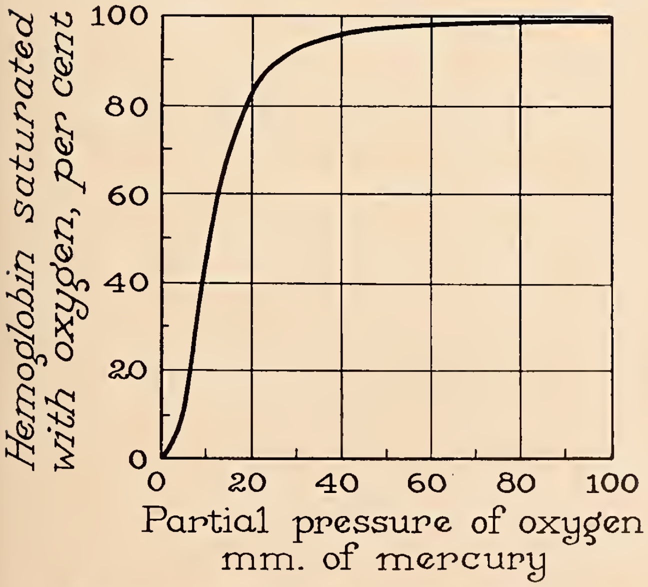

Fig. 2. Curve of dissociation of oxybemoglobin in the horse. (Modified from Barcroft, Joseph: Quoted in Henderson, L. Jr.: J. Biol. Chem. 41:402 [Mar.] 1920.)

The illustrations are suggestive as to what takes place in man. They are not entirely valid because, owing to buffering effect, the behavior of hemoglobin inside the erythrocyte does not parallel the changes in hemoglobin outside the erythrocyte. These graphs illustrate, however, the importance of respiratory alkalosis in curtailing oxyhemoglobin dissociation.(9)

Other changes also are brought about by respiratory alkalosis and contribute to the hyperventilation syndrome. It has been thought for years that the amount of ionized or available calcium may be influenced by respiratory alkalosis. The binding effect of alkalosis upon ionized calcium indeed would tend to bring about a transitory functional hypocalcemia, thereby causing the tetany observed with hyperventilation. In recent years some doubt may have been cast upon this as a mechanism. Currently there has been interest in the role of potassium as a possible influence on the increased neuromuscular excitability noted in the hyperventilation syndrome. Whatever the mechanism, cer-

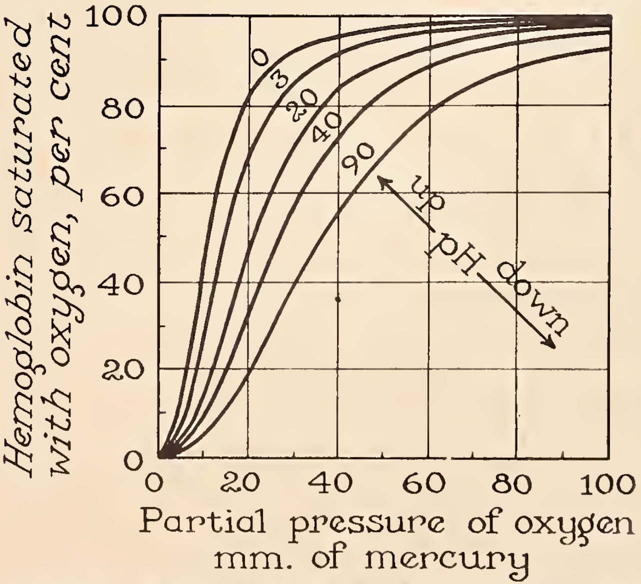

Fig. 3. The effect of changes in the pH of serum, produced by the presence of carbon dioxide at pressures which vary from 0 to 90 mm. of mercury, on the dissociation of oxyhemoglobin in the horse. (Modified from Barcroft, Joseph: Quoted in Henderson, L. J.: J. Biol. Chem. 41:402 [Mar.] 1920.)

tainly an increase of neuromuscular irritability is associated with respiratory alkalosis.

Measurements of blood flow in the head in the course of respiratory alkalosis have given interesting findings. The diameter of blood vessels in the brain are observed to contract, thereby reducing, perhaps by one-third, the blood flow through the head.(10, 11)

Clinical Appearance

Regarding the clinical appearance of the hyperventilation syndrome one may make certain observations. The syndrome varies from person to person, although in a given individual it tends to repeat its established pattern. The variation occurs because different systems are more prominently affected among different persons. The ease with which symptoms of respiratory alkalosis may be elicited is greater in some than in others. In certain patients symptoms may be evoked by two or three deep breaths; in others far more overbreathing is required. The presence or absence of associated anxiety influences the reactions observed.

The usual pattern of the hyperventilation syndrome begins with a feeling of giddiness or lightheadedness. As the symptoms progress, although the patient actually has been overbreathing a feeling of suffocation and of inadequacy of respiration develops. Often he will go out of doors, open a window, or fan himself. He will make such statements as "The air is doing no good," "I can't get enough air," "The air is not going down far enough," or, "I can't get a satisfactory breath." At this stage the patient often has a discomforting sense of vague, dull pressure within the chest. Often he will press on the thoracic cage in an attempt to relieve the sensation of a vacuum that he is feeling within his thorax. Tumultuous palpitation may occur at this stage and accentuate his anxiety.

With further hyperventilation a patient soon experiences a sensation of tingling and numbness, occurring first peripherally in a stocking-and-glove distribution, and progressively extending centrally. Often patients feel numb particularly around the mouth. These parethesias are precursors of tetany. As hyperventilation continues and as respiratory alkalosis deepens in such patients, isolated twitching of various muscle groups develops. Judgment and fine coordination of movement are impaired. With further hyperventilation come spontaneous tetanic contractions of muscles. These occur initially as carpopedal spasm, but as they progress may lead even to opisthotonus.

Involvement of Central Nervous and Cardiovascular Systems

In the foregoing description of symptoms associated with hyperventilation may be seen a predominance of symptoms associated both with the central nervous system and with the cardiovascular system. I should like to speak briefly of the effects of hyperventilation upon these systems.

Related to the central nervous system are the impairment of judgment, confusion, and ultimate stupor that may develop in the course of hyperventilation. Other observations also indicate the scope of changes occurring in the central nervous system, particularly the patterns hyperventilation induces in the electroencephalogram. If a convulsive disorder is suggested by an electroencephalogram, hyperventilation will accentuate the abnormal pattern. The incidence of convulsions is increased by hyperventilation.(12, 13) Conversely, measures that induce the state of acidosis have been used as a means of controlling convulsions.

The confusion associated with hyperventilation has particular significance in aviation as a factor in pilot error. This was emphasized by Hinshaw, Rushmer and Boothby.(14, 15) Hinshaw noted it when, as an inexperienced pilot, he encountered a technical flying problem. He had misjudged distance in an attempt at landing. He recognized in himself the symptoms of hyperventilation and by briefly holding his breath brought the syndrome quickly under control.

Patients exhibiting anxiety or conversion hysteria may utilize hyperventilation as a trigger mechanism to facilitate the induction of their hysterical manifestations.

With respect to the cardiovascular system, White and Hahn,(16) after World War I, came to the conclusion that respiratory alkalosis was largely responsible for the syndrome known as neurocirculatory asthenia. Among a group of healthy subjects sighing respiration occurred in but 19 per cent; in a group with the diagnosis of neurocirculatory asthenia sighing was observed in 80 per cent. In World War II this diagnosis was among those mostly commonly overlooked.

Electrocardiographic changes are known to occur with respiratory alkalosis. Thompson(17) reported changes in the T wave of electrocardiograms of normal subjects after hyperventilation. Barach and his associates(18) studied the effect of the anoxia test for coronary insufficiency to determine whether respiratory alkalosis contributed to electrocardiographic changes noted in coronary-artery disease. They found that respiratory alkalosis made a positive pattern more abnormal, and that the changes were partly corrected as carbon dioxide in small amounts was added to the inhaled oxygen.

Diagnosis and Treatment

The diagnosis of hyperventilation syndrome is possible only when the physician is aware that such an entity exists. When he suspects that respiratory alkalosis is the basis for a patient's functional symptoms, the physician may gain added information by having him breathe deeply at the rate of perhaps 30 respirations per minute for 1 to 3 minutes. With this procedure it is interesting to observe that the patient gradually accelerates his respiratory rate. Although one must encourage him during the initial phases of the forced breathing, he breathes faster as alkalosis develops. After a reproduction of his symptoms, he may then reverse this process by allowing carbon dioxide to reaccumulate in the alveoli. The induction of respiratory alkalosis and its reversal with a correction of symptoms will enable an incredulous patient to recognize his symptoms and to observe a means for their correction.

Various methods are available for treating the symptoms of respiratory alkalosis. Perhaps the most important element of the treatment is the reassurance a patient derives from observing that his symptoms indeed are not of the major import he has ascribed to them. There are several helpful procedures the patient can apply. Rather than struggle for a deep breath, the patient should be encouraged to hold his breath for 20 to 30 seconds. This leads to a considerable correction of symptoms of respiratory alkalosi. Of greater help, however, is to rebreathe air, perhaps 10 times, repeatedly from a paper sack. With each exhalation the carbon dioxide content in the sack is increased, and by rebreathing this air the patient builds up the partial pressure of carbon dioxide within his alveoli, leading to a correction of his symptoms of respiratory alkalosis. If it is available, inhalation of a mixture of oxygen with from 3 to 5 per cent of carbon dioxide is useful in the correction of the hyperventilation syndrome. Patients with hyperventilation syndrome usually improve after treatment by sedation.

This interesting syndrome of hyperventilation is one we encounter daily in our medical practice. An increased understanding and awareness of this condition enables us to help a sizable percentage of our patients who present themselves with a variety of functional diseases, many of whom have shopped from doctor to doctor because they "just know something is wrong."

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ARIZONA MEDICAL ASSOCIATION ANNOUNCEMENT
ORIGINAL PAPERS — 1960 ANNUAL MEETING

April 1st is the deadline for accepting papers to be judged by the Scientific Assembly Committee to be presented during the 1960 annual meeting in Scottsdale, the award for the most original contribution to be a bronze plaque which will be presented at the president's dinner dance.

Calcifying Tendinitis and Bursitis of the Shoulder

By

Newton C. Mead, M.D.

MORE THAN ten years ago in a study based on one hundred eighty patients with calcium deposits in the musculotendinous cuff of the shoulder, it was found best to group these patients into acute, subacute, and chronic cases since the mechanism of the production of the pain and the method of relieving the symptoms and pathology differed widely in these three groups. A fourth group, consisting of patients whose chronically involved shoulders suddenly flared up into a picture of acute bursitis, were included with the acute classification.

We were lead to the conclusion that these shoulders were not involved primarily in a bursal inflammation, but that the pathology began in the depths of the tendons on the floor of the bursa. Bursitis occurred in these cases only when the calcifying process in the tendon expanded into a "chemical abscess" and pointed in the bursal floor.

It was further noted that prompt relief of the pain followed release of the tension in these lesions by various surgical procedures or by spontaneous rupture, The presence of calcific material free in the bursa was not a cause of serious pain.

Calcific lesions not under much tension and classified as subacute were not extremely painful, but were sufficiently annoying to require active treatment. These responded best to open operation with removal of the calcific process by incision into the tendon and curettage of the lesion.

The chronic lesions were often so quiet symptomatically that no radical treatment was justified but, when necessary, open surgery with debridement of the bursa and, frequently, excision of a portion of the acromion process, gave good results.

Since this report 1382 calcifying lesions of tendons have been seen at Evanston Hospital. Of these 1255 were located in the shoulder cuff.

1382 Patients With Calcification In Tendons

Location	*Sex %*		*Total*	*Average*
Deposit	*M*	*F*		*Age*
Shoulder	40.1	59.8	1255	48.9
Wrist	50	50	14	53
Hip	54	46	50	51
Elbow	40	60	30	47
Knee	64	36	25	41
Misc.			8	

The handling of these patients, from the orthopedic standpoint, shows that the conclusions drawn from this earlier series were correct, and our methods have remained very much as they were ten years ago. We have added nothing basic to the original work of Codman, published in 1934, and it seems unfortunate that the profession, as a whole, has not become more familiar with what he wrote.

The anatomy of the shoulder region must be understood before the nature and treatment of calcifying tendinitis can be put on a rational basis.

The strap-like tendons making up the musculotendinous cuff are arranged around the shoulder so as to cover the anterior superior and posterior aspects of the joint. The subscapularis

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Presented at 1959 Annual Meeting Medical Society of the United States and Mexico.

lies in front, the supra-spinatus and infra-spinatus are attached to the greater tuberosity above, and the teres minor lies posteriorly. There is no well-defined space between these tendons and the true capsule of the joint is difficult to separate from them. They are covered on their outer surface by the synovial floor of the subdeltoid-subacromial bursa. It will be seen that the tuberosity at the point where the supra-spinatus is attached may come in firm contact with the acromion in abduction of the shoulder, a fact of great sigificance in the etiology and treatment of lesions occurring there.

The subdeltoid-subacromial bursa (usually one continuous space) is large, sometimes measuring over 10 cm. in its largest diameter. It covers the periarticular structures of the shoulder quite thoroughly and permits free motion of these structures beneath the acromion and deltoid muscles. The instillation of air or diadrast into this bursa will demonstrate its extent.

Inflammatory conditions of the bursa, especially if adhesions occur, will prevent free motion and "frozen shoulder" may result. It may be mentioned here that true frozen shoulder is not a usual sequel of calcific tendinitis, for it occurs in this condition not more frequently than in other painful shoulder lesions.

The interior appearance of a healthy bursa is similar to the interior of a joint, the lining being smooth and white over the tendons and humeral tuberosities. In old degenerative lesions the yellowish synovial lining shows folds and a loss of the glistening lining. There may be coarse adhesions present. Calcific deposits of a chronic nature are situated deeply in these opaque tendons and may not be seen when the bursa is opened.

An acute or subacute process is easy to locate for these are more superficially located in the tendons in the bursal floor and they are surrounded by a zone of definite, often intense, inflammation. The "pointing" white calcific mass may resemble a snow-capped mountain peak, or, more realistically, a boil about to rupture.

Why do these deposits occur? They appear to be a result of injury within the tendon resulting in deposition of insoluble calcium(9) phosphate in an area of increased pH. Their presence in areas of frequent traumata seems to support this, but their relatively infrequent occurrence in overhead workers, and the rather even distribution between the sexes and between right and left shoulders is hard to explain on a traumatic basis. The lesions are degenerative in nature, but, strangely, are less common in the old patients in whom degenerative lesions are frequent. The commonest age to find calcific tendinitis of clinical importance is between 45 and 50 years.

A more difficult question to answer is: Why do quiet "chronic" deposits suddenly flare up with acute symptoms? Our only answer is that, with continued trauma, the process erodes its way from the deeper portions of the tendon to the sensitive bursal floor where the pain produced may be excruciating. Those deposits which are superficial from the outset do not go through a definite chronic phase but produce acute symptoms from the early stages. Acute symptoms in aged persons with calcium deposits are rare. Calcium in aged tendons is of little clinical significance.

The clinical picture of calcifying tendinitis varies with the acuteness of the process.

The acute flare-up is often a dramatic affair, the patient being completely disabled with pain. A sleepless night nearly always precedes the examination by the doctor. The patient usually has had one or two days of dull annoying pain before the acute pain suddenly appeared. He may recall previous annoyance with the shoulder over a period of years or even previous acute attacks. These patients always will have a localized area of acute tenderness, sometimes with visible or palpable swelling at the site of the pointing calcific process. They will refuse to move the arm.

Patients with subacute calcific processes will have a complaint of dull, vague, annoying pain, usually referred downward to the vicinity of the insertion of the deltoid muscle. Abduction gives pain, and rotation, especially if done rapidly, will also be resisted. Local tenderness is not definite. The pain is generally worse after exercise of the shoulder. Some indefinite pain may be referred distally, even into the hand, but it is never of a segmental distribution. It is not uncommon for chronic calcific deposits, especially in the aged, to produce no trouble at all, but most of them, at times, produce pain similar to that of the subacute group, but less in intensity.

Diagnosis of calcific tendinitis is not difficult since x-rays show the deposits and the symptoms are usually clear. The localization of the mass may be accurately determined if the position of the humerus is known. We insist that views be made in internal rotation to demonstrate deposits in the teres minor; in external rotation to show calcification in the subscapularis. Deposits in the supra and infra-spinatus tendons will usually show well in neutral positions. But sometimes a large deposit may be lost behind a bony structure. Occasionally deposits will appear beneath the muscle sheath at some distance from the true tendon.

When calcified deposits have ruptured, their content may often be seen as a suspension in the dependent portion of the bursa.

An error may arise if an innocent quiet calcium deposit is blamed for symptoms produced by other lesions in the shoulder or neck. Therefore, it is proper that some discussion of other painful lesions be included here.

Periarthritis, adhesive bursitis, and capsulitis are different names for the same process. The end result of this is the "frozen shoulder" in which little or no scapulohumeral motion is possible and in which there may be severe aching pain.

Acute calcific tendinitis may be confused with this because the pain may prevent all shoulder motion. Acute calcific lesions always give point tenderness, which is lacking in frozen shoulders, and the pain is more intense. Efforts to move a frozen shoulder passively are not resisted strongly, but this will not be tolerated by the calcific tendinitis sufferer.

In the less acute calcifying process the range of motion is not limited and differentiation is easy. It is well to remember that acute tendinitis, as well as other painful lesions about the shoulder, may finally result in frozen shoulder, and that calcium may sometimes be found in the musculotendinous cuffs of these cases. Frozen shoulders show an inability to move the scapulohumeral joint, which is not accounted for by the pain alone.

Patients who have shoulder and arm pain from pressure or irritation of nerve roots in the foramina of the cervical spine may also show coincidental calcium deposits in the roentgenograms of the shoulder. Care in the examination of these patients will show that shoulder motion itself is not much limited, and tests of shoulder function are carried out well. These patients will often show sensory changes of a segmental distribution. Tests for brachial plexus tenderness and scalenus anticus muscle spasm and/or cervical rib should be made.

Occasionally it will be difficult, in an older patient with degenerative changes, to rule out rupture of the shoulder cuff. The author has found ruptures unexpectedly on two occasions when opening a bursa in a chronic case of calcific tendinitis. No attempt at repair of ancient defects of this kind need be made. Acute reparable ruptures of the cuff are difficult to diagnose but are not confused with calcific tendinitis and are a separate subject.

Gout may occasionally produce an extremely painful shoulder and may even show opacities in the x-rays. The author has never found uric acid in any deposit he has removed either by needle or by open operation in any of his cases. Nevertheless, it is well to look for other evidence of gout, especially in the older patients in whom other joints and fibrous tissues are painful.

TREATMENT

It is important to consider treatment separately in the three groups: acute, subacute, or chronic, for each group is treated differently.

The acute case may be considered a chemical abscess. The object of treatment is decompression of this process and this may be done by radical needling or by open surgery. If this is properly done, relief is prompt and usually permanent. X-ray films taken three weeks after this decompression will show absorption of all or most of the remaining calcium. Other methods frequently used in the treatment of these acute cases, such as x-ray therapy, diathermy, ultrasound, and other non-surgical methods, are reserved for patients who refuse needling or operation. It does appear that some of these methods may cause the "abscess" to rupture into the bursa more rapidly than if the process is allowed to run its course, but the only controlled studies of the results of x-ray treatment suggest it has no effect at all. Despite this, some writers report favorably on the results with x-ray treatment, even in chronic cases, and prefer it to other methods. Spontaneous rupture "cures" the acute attack, but complete absorption of the deposit may not follow this type of decompression and a chronic deposit may persist with the ever present possibility of future flare up. Needling may fail when a number of deposits are present and some are missed, since chronic deposits may be present in acute cases and are easily missed even at open surgery. They may remain to flare up at a later time.

The subacute case, especially when the deposit is a large one, should be treated by open operation when the symptoms are serious enough to justify this surgery. Needling is often disappointing in these cases because the localization by tenderness is not definite and the deposits may be of the granular or dry type, which do not flush out well. Pain here may be worse after the needling for a number of days than it ever was before and cure sometimes does not result.

Chronic cases should never have radical needling, but they may often be benefited by the injection of Hydrocortone or other steriod suspensions, which quiet the mild bursal inflammation. The use of physical agents, such as x-ray therapy, is ineffective in these chronic cases except for the psychic benefit the patient may receive. Lesions situated deep in the tendons do not produce intolerable pain and such patients do not like the idea of open surgery. It follows that most of them receive no operative treatment or radical needling. When surgery is done the bursa will be found to be degenerated and the desposits will be difficult to locate and they will require curettage for complete removal. Debridement of the folds and adhesions of the bursal lining is often necessary. The area of friction between the greater tuberosity and the acromion will often be evident and present a circular crater surrounded by thickened synovial folds. Rupture of cuff tendons is sometimes found. Visual observation of the effects of various movements of the extremity on the structures in the bursa may suggest the resection of the acromion.

In all cases where radical treatment is done, indeed in all cases of calcific tendinitis, it is well to prescribe what we call hanging arm exercises. These are done as follows: With the patient standing and bent forward so that the hand hangs near the floor, the arm is swung loosely in circles, both clockwise and counterclockwise about twenty times in each direction. It is then swung pendulum fashion transversely and also vertically a similar number of times. In this gentle way very painful shoulders can be kept mobile and free of dense tight adhesions in the subacromial bursa.

The technique of needling. (See diagram) With the patient under the influence of a hypodermic of morphine or similar anodyne, he is placed upon his side with the affected shouler upward. The area of exquisite tenderness is located accurately by very thorough testing with the fingertip. This spot is marked by denting the skin with the point of a forceps or other instrument, after which the skin is prepared by a thorough scrub and such chemical antiseptics as are desired. The tender area is then anesthetized, beginning with a large wheel of 1% novocaine. The muscle is then infiltrated down to the tender area and at this point the patient experiences

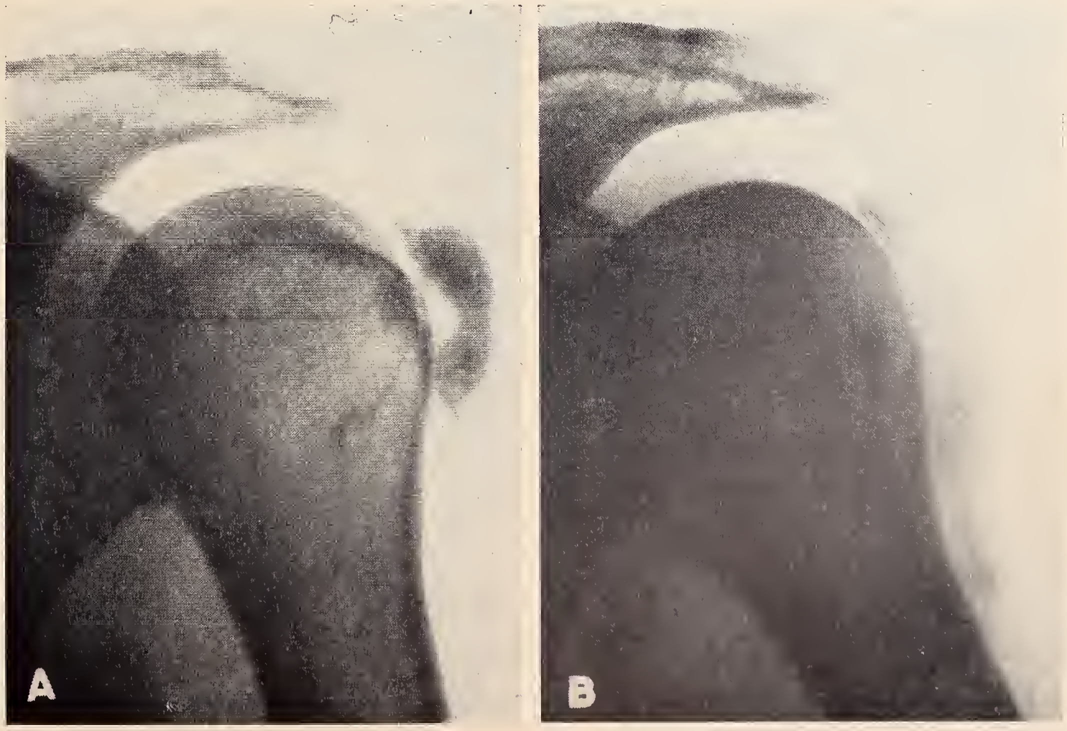

Fig. 1 (A.B.)

sharp pain and the operator may frequently withdraw a little cloud of calcified material into his syringe. The area is freely infiltrated with novocaine, the patient complaining of pain as this is done. The needle is left in place. Three or four needles of 18 guage are now inserted at different angles so that their points will be in the same area as that of the first "guide" needle. Novocaine is alternately injected and withdrawn in an attempt to either withdraw the calcium or flush it out through the other needles. If calcium is not found, the needle is partially withdrawn and inserted at a slightly different angle, and this is repeated numerous times with each of the needles. Usually calcium will be encountered early in the procedure if it is to be found at all. If the patient is not experiencing pain, the irrigation can be continued with normal saline solution as long as desired without the risk of injecting too much novocaine.

When the surgeon believes he has thoroughly decompressed all calcific deposits, he withdraws all but one needle and through this he inserts 50 to 100 milligrams of Hydrocortone before withdrawing it. The area of the injections is then massaged with a sponge and a small dressing is

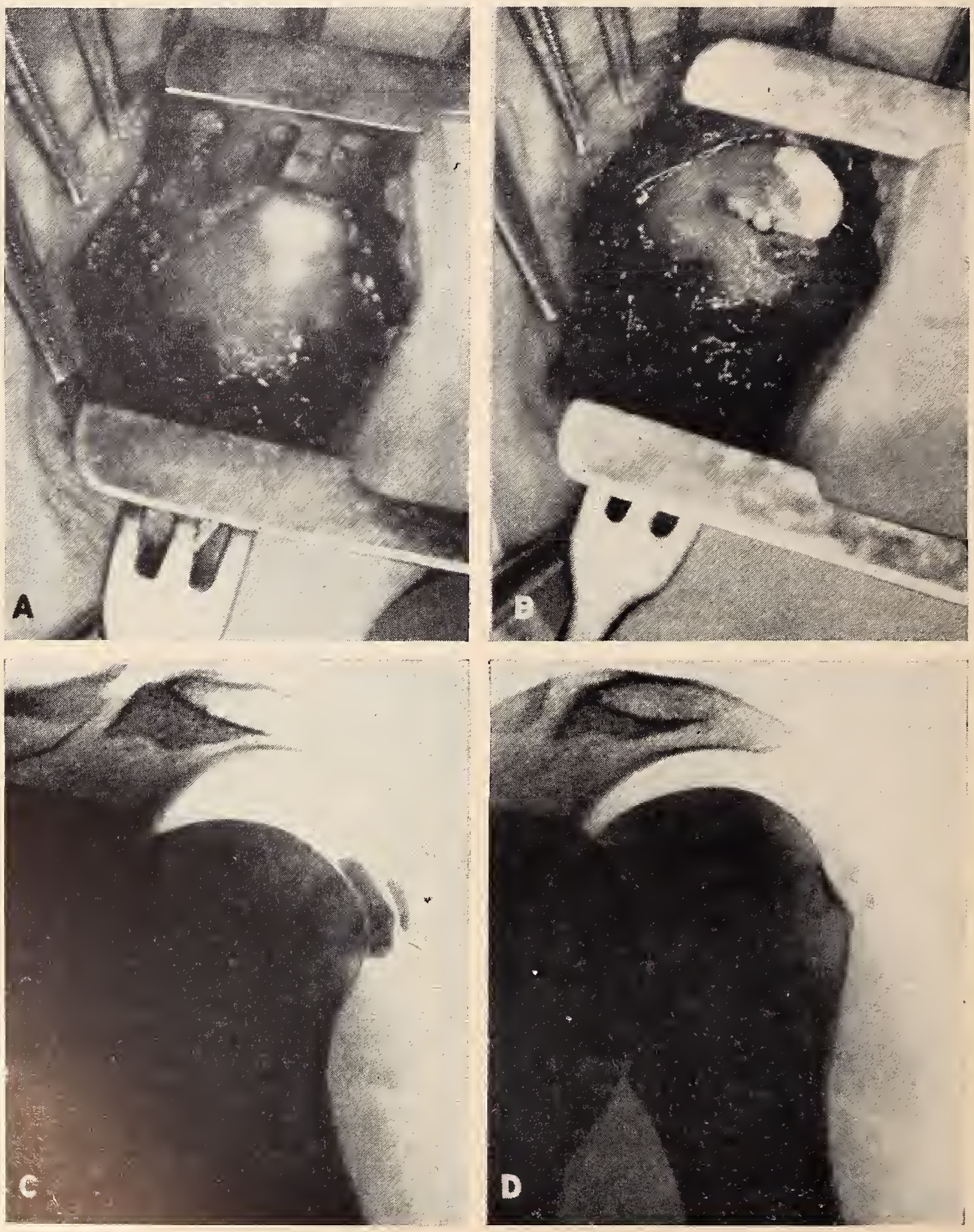

Fig. 2 (A.B.C.D.)

placed over the needle holes, which may be oozing and the patient is urged to move his shoulder through a normal range to convince him it is not painful. If pain of any severity is felt at this point, it is probable that the procedure has not been adequate and a rather painful post-operative course may be expected. A sling may be provided but the patient is ordered to perform the hanging arm exercises four to six times daily until he is well. Sometimes he refuses to do them for about twenty-four hours because the motion is painful, but usually little difficulty is experienced. Because of the frequent period of pain following a needling, which may last from one to several hours, it is well to give a prescription with a good anodyne for the patient to use after he leaves the treatment room.

The technique of open operation. (See illustration). This is done approximately as Codman described it. The patient is placed upon his back with a sand bag under the affected shoulder. The elbow is not supported but rests upon the table. The incision is about two inches in length and starts at the anterior tip of the acromion process and extends downward in line with the deltoid fibers, which may be separated to expose the roof of the bursa, which is the deep fascia of the deltoid muscle. This fascia is incised after being lifted with Allis forceps and the floor of the bursa comes into view. With the shoulder in neutral position, the supraspinatus insertion will be visible through this incision. To inspect the subscapularis the arm is rotated outward. The infraspinatus is seen with moderate internal rotation and the teres minor will come into view if marked internal rotation is done. The bursal floor varies greatly in appearance in these conditions and an acute case will show an intensely red area with a raised yellowish or white center, which indicates the site of a calcified mass. The subacute condition may have a similar appearance but usually there is less intense hyperemia, and the deposit is less superficial and is occasionally hard to find.

When the deposit is incised in the acute case, watery material with curds resembling sour milk may be found, or the deposit may be thick and pasty. It is always under pressure, and may even come out with a little "squirt". The subacute case will usually show soft putty-like material, often with some hard granular deposits in the surrounding tendon tissue. The chronic case may show granular, crystalline, or dry, caked, powdery material, though soft material is sometimes encountered. The author has never encountered calcified material in the bursal cavity itself at operation; it has always been in the tendon substance.

After cleansing and curretting the tendon defect and exploring the whole bursal floor by rotating the arm, closure is accomplished by placing some fine silk sutures in the roof of the bursa and superficial deltoid fascia. The skin is also closed with silk. Occasionally, a large defect of the bursal floor, remaining after the calcium has been removed, will require closure with fine interrupted silk sutures.

A chronic case may show very extensive degenerative changes and little or no inflammation. It may be very difficult to find the calcium, and one may have to resort to x-ray help in the operating room to accurately locate it. In these cases the pain may not be arising from the calcific deposit, and when no deposit under tension is present, the inexperienced surgeon may wonder whether anything advantageous may be accomplished after he has entered and inspected the bursa. It has generally been found that excision of the folds, adhesions and irregularities in the bursal floor will be followed by benefit, and usually with good post-operative treatment, the adhesions do not recur. It has been the author's practice to manipulate these shoulders and study the mechanics inside the bursa at the time of surgery, and this has often led him to excise the outer portion of the acromion process. This can be done in such a way as to allow the detached deltoid muscle to be readily repaired and it can be seen by further tests that the source of friction and irritation has been removed. The results of this procedure have been gratifying and many industrial cripples have been returned to useful work by this means.

Since ladies and, occasionally men, will object to the permanent scar which may follow the classical Codman incision for bursal inspection, it has been my practice, when the cosmetic result is a primary consideration, to make the incision horizontal, which is in line with the natural skin creases. Such incisions, while they do not give quite as easy an exposure, do heal with a less prominent scar.

Complications: Infection has never developed in any case in this series. However, the occurrence of severe pain following needling has been a source of considerable concern in occasional patients. It has been our practice to warn all patients that a very unpleasant few hours may follow needling. When this does not occur, these patients are not disappointed and if it does occur, they have been warned and are not so alarmed. We have seen only two cases of frozen shoulder following surgical procedures on calcific tendinitis. We give credit to our insistence upon the hanging arm exercises rather than to steroids for this low figure. An allergic response to novocaine was severe in one patient. Multiple joint pain, loss of weight, and other symptoms similar to those of rheumatoid arthritis persisted for nearly a year.

Recurrence of acute calcific tendinitis in a shoulder which has been completely decompressed has been rare (3%). However, inadequately needled patients in whom a few asymptomatic deposits were missed at the time of the procedure may flare up in an acute attack and appear to be a recurrence.

CONCLUSIONS

1. There have been no major changes in the understanding or management of calcific tendinitis in the last ten years. The use of steroid suspensions has been added, but has not materially improved results in acute cases when used with or without surgical procedures. These agents have been helpful in the management of the mildly symptomatic, chronic or subacute lesions.

2. Open surgery gives the most consistently good results in acute and subacute deposits. Radical (multiple) needling is a generally satisfactory and often more desirable method in acute cases.

3. The use of x-ray therapy, diathermy, ultrasound and other physical agents to accelerate the spontaneous decompression of calcific masses has not been proved effective and should be restricted to acute lesions where more direct methods are contraindicated or undesirable. The use of these agents for chronic lesions has only psychic value.

4. The acute painful calcified lesion under tension is a problem entirely different from the chronic or subacute deposit with little or no internal tension. Studies and statistics which fail to separate these types lose much of their value. The acute lesion will respond to treatment which results in decompression or it will rupture spontaneously. In a high percentage of acute lesions the calcified deposit will thus disappear permanently. The chronic lesion responds poorly to any treatment and rarely disappears without surgical treatment. Persons who speak of "self-limited" nature of calcific tendinitis must be speaking about the acute lesion only.

5. The removal of the irritating margin of the acromion in chronic disabling lesions may be very beneficial.

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The number of MDs in shopping centers jumped 35% in one year . . . from 2981 in 1958 . . . to 4025 in 1959.

Most shopping center doctors practice in professional buildings. Of 3035 centers, 1739 have no physicians . . . 856 have MDs in professional buildings . . . and 440 have MDs in other quarters.

Of 4025 MDs, 80.8% are located in professional buildings . . . and 19.2% are located in other quarters.

(from New Medical Materia, Vol. 1, No. 10)

Grave concern over the hiring of physicians and exploiting their services by hospitals was manifested when 12 separate resolutions on "relation of physicians and hospitals" were introduced. The introduction of so many resolutions could be construed as a rebuke to the Judicial Council for the leniency of some of its past decisions. The controversy was resolved when the Delegates reaffirmed the 1951 Guides as its policy on hospital-physician relations and that "all subsequent or inconsistent actions be considered superseded."

(AAPS Information Bulletin No. 19-59)

Tendinitis Calcificante y Bursitis del Hombro

Newton C. Mead, M.D.

EN UN estudio hecho hace más de diez años en 180 casos de depósitos calcíficos en los tendones del hombro se prefirió clasificar los pacientes en agudos, subagudos y crónicos toda vez que el mecanismo de producción del dolor, el tratamiento y la patología diferían considerablemente entre un grupo y otro. Los pacientes con padecimiento crónico que repentinamente manifestaban síntomas agudos se incluyeron en el grupo de los agudos.

Este estudio nos demostró que la patologia principal en estos casos no es una reacción inflamatoria de las bolsas y que el dolor se origina en el suelo de la bolsa. La bursitis en estos casos se manifestaba solamente cuando el proceso de calcicifación del tendón se convertía en un proceso químico que eruptaba en el suelo de la bolsa.

Tambien se descubrió que el alivio en estos casos depende del aminoramiento de la tensión en las lesiones, bien por métodos quirúricos o por drenaje espontaneo. La presencia de substancias calcíficas en sí dentro de la bolsa no causa dolor.

Las lesiones calcíficas sin mucha tensión, las que constitúan el grupo subagudo, no causaban dolor intenso pero si ocasionaban molestias que requerían tratamiento activo. El tratamiento de preferencia en estos casos era la operación para extraer los depósitos calcíficos abriendo el tendón raspando la lesion.

Las lesiones crónicas solían ser muy asintomáticas y la mayoría de los casos no exigían tratamiento radical. Sin embargo cuando era menester se abría el hombro, se limpiaba la bolsa y frecuentemente se amputaba parte del proceso acromio.

Desde la publicación de este informe hemos visto 1382 lesiones calcificantes de tendones en el Evanston, Hospital. De las 1382 lesiones, 1255 ocurrían en el hombro.

PLACA NUMERO 1

1382 Pacientes Calcificaciones en los tendones

Ubicacion del Depósito Calcífico	Sexo M	Sexo F	Total	Edad Promedio
Hombro	40.1	59.8	1255	48.9
Muñeca	50	50	14	53
Cadera	54	46	50	51
Codo	40	60	30	47
Rodilla	64	36	25	41
Miscelaneas			8	

El tratamiento actual de estos pacientes, desde el punto de vista de ortopedia, indica que las conclusiones derivadas del estudio anterior eran correctas y nuestro tratamiento no ha cambiado en forma notable. No hemos agregado a mejorado en nada fundamental el trabajo original de Codman, publicado en 1934, y es una lástima que la profesión en general no se haya familiarizado más con sus conceptos.

Es imprescindible conocer la anatomía del hombro al detalle para poder entender la patología y el tratamiento de las tenditis calcificantes.

Los tendones que componen el grupo del hombro están dispuestos en tal forma que la parte antero-superior y la parte posterior del hombro quedan cubiertas. El tendón subescapularis queda enfrente, el intraespinato y el supra-espinato se insertan en la tuberosidad mayor del húmero y el teres menor yace en el aspecto posterior. Los tendones no están muy bien definidos en su curso y la cápsula propia de la articulación no se distingue en forma clara. El suelo sinovial de la bolsa subdeltoidea-subacromia cubre el grupo tendinoso en su aspecto externo. Está claro que la tuberosidad hace contacto firme con el acromio en la posición de abducción del hombro, detalle que es de importancia maxíma en la etiología y el tratamiento de las lesiones en discusión.

La bolsa subdeltoidea-subacromia es grande en extensión, a veces alcanzando un diametro máximo de 10 cms., y generalmente es continua. Cubre ampliamente las estructuras periarticulares del hombro y permite el movimiento libre de estructuras debajo del acromio y del deltoides. La extensión de esta bolsa puede demonstrarse fácilmente con la inyección de aire o de alguna materia radio-opaca.

Las condiciones inflamatorias de la bolsa, sobre todo cuando se han formado adherencias, obstruyen el movimiento libre del hombro y pueden causar el "hombro congelado" (Frozen Shoulder). Sería prudente aclarar aquí que el verdadero "hombro congelado" no es siempre secuela de la tendinitis calcificante porque se encuentra esta condición con igual frecuencia en muchas otras condiciones dolorosas del hombro.

La apariencia interior de una bolsa sin patología es muy similar a la del interior de una articulación. La superficie es suave y blanca sobre todo en sus puntos de contacto con los tendones y las tuberosidades del húmero. Cuando existen lesiones degenerativas la superficie sinovial es amarillenta y áspera con dobleses y pierde la suavidad brillante de la superficie saludable.

Las deposiciones calcíficas crónicas se desarrollan en el interior de estos tendones y se ven solo con dificultad.

El proceso agudo o subagudo se encuentra muy fácilmente porque estos se localizan más superficialmente en el suelo de la bolsa y están rodeados de una zona inflamatoria definida e intensa. La masa calcífica blanca se asemeja a la cumbre de una montaña cubierta de nieve, o más bien a un tumor a punto de reventar.

¿Porqué se forman estos depósitos? Parecen ser el resultado del trauma dentro del tendón. El fosfato cálcico insoluble se deposita en una zona de pH aumentado. Su presencia en lugares de trauma frecuente apoyan esa conclusión, pero su ausencia relativa en personas que trabajan principalmente con los brazos alzados, así como la distribución más o menos igual entre un brazo y el otro no se explican muy bien a base de trauma. Las lesiones son de caracter degenerativo pero sin embargo no se ven con tanta frecuencia en personas mayores como ocurre con otras lesiones de esa índole. La tendinitis calcificante se ve con mayor frecuencia entre los 45 y los 50 años de edad.

Hay otro punto más dificil de explicar. ¿Porqué los depósitos asintomáticos momentaneamente resultan con síntomas agudos? La única respuesta es que con el trauma continuo el proceso corre a través del tendón hasta llegar al suelo de la bolsa produciendo un dolor muy insoportable. Los depósitos que son superficiales de un principio no pasan por una fase crónica y producen síntomas agudos desde su comienzo.

Los síntomas agudos en personas mayores con depósitos calcíficos son raros. El calcio en estos pacientes es de poco significado clínico.

El cuadro clínico de la tendinitis calcificante varía con la agudeza del proceso

La exacerbación aguda a menudo suele ser un episodio dramático al punto de incapacitar casi totalmente al enfermo con el dolor. El paciente por lo general ha tenido uno o dos días de incomodidad antes de aparecer el dolor agudo. Al tomar la historia se descubrirá que el enfermo ha tenido molestias en el hombro por espacio de años y quizás hasta haya sufrido ataques agudos previos. Al examinar estos casos siempre se encuentra un area de dolor agudo a veces con edema palpable o visible en el centro del proceso calcificante. El brazo está inmóbil por el dolor.

Los pacientes con procesos calcificantes subagudos se quejan de un dolor molesto e indefinido que generalmente se refleja en el area de inserción del deltoides. La abducción y la rotación del hombro agravan los síntomas. El dolor se empeora al ejercitar el hombro y a veces se extiende distalmente hasta la mano pero nunca manifesta distribución segmentada. No es nada extraño encontrar casos de tendinitis calcificante que no tengan síntomas pero en su mayoria todos producen dolor parecido al del grupo subagudo aunque menos intenso.

El diagnóstico de tendinitis calcificante no es difícil porque los síntomas son claros y las radiografías muestran los depósitos calcíficos. La posición exacta de la masa de fosfato cálcico se puede determinar con exactitud si se conoce la posición del húmero. Nosotros insistimos en que se tomen radiografías del hombro en rotación interna para demostrar los depósitos en el teres menor, y en rotación externa para ver los depósitos en el subescapularis. Los depósitos en el supraespinato y el infraespinato se ven bien en la posición neutral. A veces un depósito más o menos grande se pierde detrás de una estructura osea. De vez en cuando se ve uno que otro depósito debajo de la masa muscular propia, algo retirado del tendón.

Al reventar un depósito calcifico el contenido se ve como una suspensión en la parte baja de la bolsa.

Se puede cometer el error de achacar a un depósito calcifico un dolor producido realmente por otras lesiones del hombro o del cuello. Por lo tanto nos incumbe discutir otras lesiones dolorosas en este trabajo.

Periartritis, bursitis adhesiva o capsulitis son nombres distintos para un mismo proceso. El resultado final es el mismo: El "hombro congelado" (frozen shoulder) en el que hay poco o ningún movimiento escapulo-humeral y en el que puede haber dolor severo.

La tendinitis calcificante aguda se puede confundir con este proceso porque el dolor en ambos casos obstruye el movimiento del hombro. Las lesiones agudas calcificantes, sin embargo, producen dolor de punto y el dolor es más intenso. Para mover un hombro congelado en forma pasiva no se encunetra mayor resistencia pero el enfermo no resiste eso cuando sufre de tendinitis calcificante.

En los procesos menos agudos el margen de movimiento no se limita y la diferenciación es fácil. Hay que recordar que la tendinitis aguda, así como las otras lesiones del hombro, pueden resultar en fin de cuentas en un "hombro congelado" y que el calcio se puede encontrar a veces en el grupo musculoterdinoso del hombro de estos casos. Los "hombros congelados" se caracterizan por la limitación del movimiento escapulo humeral, cosa que no se explica solamente a base de dolor.

Los pacientes que tienen dolor en el hombro y en el brazo por razón de presión o de irritación de las raíces del nervio en los forámenes de la columna vertebral cervical pueden mostar depósitos calcíficos coincidentes en la radiografia del hombro. Al examinar estos enfermos cuidadosamente se demostraría que el movimiento del hombro es muy limitado y el examen se hace sin dificultad. Estos enfermos manifestarán cambios de sensación con distribución definitivamente segmentada. Se les debe examinar para cerciorarse de que no hay irritación del plexo braquial, espasmo del escaleno-anticus o una costilla cervical.

A veces se dificulta, sobre todo en personas mayores con cambios degenerativos, diagnosticar un desgarre en el agregado musculo-tenidoso del hombro. El autor ha descubierto desgarres inesperados en dos casos al abrir una bolsa en un caso crónico de tendinitis calcificante. No hay necesidad de reparar un desgarre viejo. Los desgarres agudos del agregado musculo-tendioso son difíciles de diagnosticar pero no se confunden con tendinitis calcificante y constituyen un tema aparte.

La gota de vez en cuando presenta un cuadro clínico de dolor agudo en el hombro y en algunos casos hasta muestra opacidades en la radiografía. El autor nunca ha encontrado ácido úrico en ningun depósito que el haya extraído bien sea con aguja o con exposición abierta. Sin embargo siempre la posibilidad de gota se debe investigar sobre todo en personas mayores que sufren dolores en otras articulaciones y tejidos fibrosos.

Es muy importante considerar el tratamiento en tres grupos por separado: los casos agudos, los casos subagudos y los crónicos ya que cada grupo se trata en forma diferente.

El caso agudo es como un absceso químico. El objecto del tratamiento en este caso es reducir la tensión dentro del absceso bien sea con agujas o conexposición abierta. Hechos correctamente estos dos métodos dan alivio pronto y duradero. Las radiografías que se tomen tres semanas después de haber reducido la tensión mostrarán la absorción casi completa del residuo calcífico. Los tratamientos miscelaneos como la radioterapia, la diatermia, la ultrasonoterapia y otros métodos no quirúrgicos se reservan para aquellos enfermos que rehusen la operación o el tratamiento de agujas. Algunos de estos métodos pueden precipitar la ruptura del abceso adentro de la bolsa mucho más pronto que si se dejara al proceso seguir su curso natural. Los únicos estudios controlados hechos en radioterapia sugieren que este método no tiene efecto alguno en esos casos. A pesar de esto algunos investigadores informan resultados favorables con radioterapia aún en casos crónicos y lo prefieren a otros métodos. La ruptura espontanea "cura" el ataque cuando la decompresión es espontanea y puede quedar un residuo crónico que cause una recidiva en el futuro. Cuando hay muchos depósitos el tratamiento con agujas puede resultar en fracaso o porque algunos depósitos crónicos pueden pasar desapercibidos aún en operaciones abiertas. Estos residuos pueden eruptar otra vez en el futuro.

El caso subagudo, particularmente cuando el depósito calcífico es grande y cuando la severidad de los síntomas lo justifica, debe tratarse con operación. El tratamiento con agujas no da resultado en estos casos porque se dificulta localizer los puntos de dolor y además porque estos depósitos están ya secos y granolados y se pueden lavar bien. Los casos subagudos pueden sufrir dolor insoportable despúes de un lavaje con agujas y la cura definitiva es tan dudosa que no vale la pena correr el riesgo.

El caso crónico nunca debe tratarse con agujas pero a menudo suelen mejorar con la inyección de hidrocortona o cualquiera otra suspenión de esteroideos que aplaquen la inflamación leve de la bolsa. La fisicoterapia en estos casos no es efectiva excepto por su valor psicológico. Las lesiones localizadas profundamente en el tendón no producen dolor intolerable y los enfermos no aceptan con gusto la proposición de cirugía. La mayor parte de ellos no se someten al tratamiento de agujas ni a la operación. Cuando se hace cirugía la bolsa se encuentra degenerada, los depósitos se encuentran con mucha dificultad y hasta hay que hacer curetage para extraerlos. Muchas veces hay que hacer debridment de los dobleses y las adherencias del interior de la bolsa. El area de fricción entre la tuberosidad mayor y el acromio se veré claramente y presenta un crater circular rodeado de dobleses sinoviales gruesos. A veces los tendones se encuentran desgarrados. Al observar los efectos de varios movimientos de la extremidad en las estructuras de la bolsa, el cirujano opta por la resección del acromio.

En todos aquellos casos en que se hace tratamiento radical y hasta en todo caso de tendinitis calcificante se le recomienda al enfermo los ejercicios con el brazo colgando ("hanging arm exercises"). Estos ejercicios se ejecutan en la siguiente manera: con el enfermo de pie pero doblado hacia enfrente de suerte que la mano cuelgue libremente, el brazo se mueve en círculos primero hacia la herecha y luego en dirección opuesta, aproximadamente 20 veces en cada dirección. Este ejercicio mantiene el hombro móbil y libre de adherencias en la bolsa subacromia aún en los casos mas dolorosos.

La técnica del tratamiento con agujas, (vease el diagrama).

Despues de suministrarle morfina u otro anodino el enfermo se coloca sobre el costado aopuesto al hombro afectado. El area de dolor agudo se localiza con precisión usando presión leve con el dedo. Se marca el punto con una pinza y se prepara la piel en forma estéril como para cirúgia mayor. Se adormece el area superficial con novocaína al 1% después se infiltra el músculo hasta el area dolorosa profunda. Al punzar este punto el enfermo siente un dolor agudísimo y el cirujano logra a veces aspirar una substancia lechoza con la jeringa. Aquí se inyecta otra vez la novocaína, cosa que produce nuevamente un dolor severo. Se deja la aguja en esta posición y luego se colocan tres o cuatro agujas de calibre 18 a diferentes añgulos pero todas señalando hacia la punta de la aguja guía. Inyéctese novocaína con movimientos alternados del émbolo de la jeringa de suerte que se estabelzca una corriente fluída en el espacio afectado. En esa forma cualquier calcio que haya en suspensión saldrá libremente por una o más agujas. Si no se encuentra calcio saque la aguja parcialmente y vuélvala a introducir a un ángulo diferente. Repítase la última operación con cada una de las agujas. Por lo general el calcio se encuentra en los primeros pasos del proceso, si es que lo hay. Si el enfermo no siente mucho dolor se puede repetir indefinidamente el procedimiento usando solución salina fisiológica para no correr el riesgo de usar novocaína en exceso.

Cuando el cirujano cree que ha extráido todos los depósitos calcíficos saca todas las agujas menos una, por la que se inyectan de 50 a 100 mgms. de cortona. Una zev terminada la operación se le da un masaje al enfermo y se le pone un vendaje. Ordene al paciente que mueva el brazo en toda su extensión y si no hay dolor la operación ha sido un éxito. Cuando el hombro duele al moverlo anticipe un período de dolor y a veces hay que aceptar el resultado como mediocre. Ponga el brazo en un cabestrillo pero ordene al enfermo a hacer el ejercicio con el braza colgado que se describió anteriormente de cuatro a seis veces por día hasta que se sienta bien. De vez en cuando el enfermo se rehusa a hacer los ejercicios por 24 horas porque le duele mucho el hombro al movarlo pero por lo general no hay mucha dificultad. Désele al enfermo una receta para que tome un anodino en su casa si el dolor es muy intenso.

La técnica de la operación (vease la figura). Esta operación se hace més o menos como la describió Codman. El enfermo se coloca boca arriba con un saquito de arena debajo del hombro afectado. El codo descansa sobre la mesa. La incisión es como de 2 pulgadas de largo comenzando en la punta anterior del acromio y extendiéndose a lo largo de las fibras del deltoides. Para ver el techo de la bolsa, que es la fascia profunda del deltoides, se separan las fibras del músculo hasta llegar a la fascia. Ábrase la fascia y levántense los lados de la herida con pinzas de Allis para ver el suelo de la bolsa. Con el hombro en posición neutral se verá la inserción del supra-espinato. Para inspecionarse el subescapular hay que rotar el brazo hacia afuera. El infraespinato se ve al rotar el hombro ligeramente y el teres menor se divisa al rotar el hombro en forma más pronunciada.

El suelo de la bolsa varía en apariencia en estas condiciones y en el caso agudo se verá una area rojiza de inflamación con el centro blanco o amarrillento y levantado indicando la posición de una masa calcífica. La condición sub-aguda puede presentar un aspecto similiar pero generalmente hay menos hiperemia y el depósito es más profundo, lo que dificulta a veces hallarlo.

Al abrir la masa en el caso agudo se extrae un material como leche cuajada o a veces espeso y pastoso. Siempre hay tenión dentro de la masa y la substancia puede salir a chorro. En el caso subagudo generalmente se encuentra una substancia blanca y a menudo con depósitos granulares en el tejido tendioso que lo rodea. El caso crónico contiene material granulado cristalino y a veces hasta seco o polvoso aunque de vez en cuando puede ser también blando. El autor nunca ha encontrado material calcificado en la cavidad de la bolsa en sí, sino más bien en el mero tendón.

Después de limpiar y raspar el defecto del tendón y explorar el suelo de la bolsa rotando el brazo se cierra la herida con sutura de seda fina en el techo de la bolsa y la fascia superficial de deltoides. La piel tambien se cierra con seda fina.

De vez en cuando queda un defecto en el suelo de la bolsa despúes de extraer el depósito de calcio. Si eso sucede se repara el defecto con seda muy fina en suturas interrumpidas. El caso crónico puede manifestar cambios muy marcados pero con poca inflamación. En estos casos el depósito calcifico a veces no se encuentra y hay que recurrir a la radiografía en la sala de operaciones para localizarlo. El dolor en estos casos no se debe a los depósitos calcíficos y cuando no hay tensión interna en la masa el cirujano inexperto puede dudar de la necesidad de abrir un hombro así. La experiencia sin embargo ha probado que la excisión de los dobleses, adherencias e irregularidades en el suelo de la bolsa resulta en gran beneficio. El autor acostumbra manipular estos hombros y estudiar la mecánica dentro de la bolsa en el transcurso de la operación. Si las condiciónes del hombro lo indican se extrae parte del proceso acromio. Para hacer esto hay que desprender el deltoides que se puede reparar sin dificultad. Los resultados de este procedimiento han sido muy halagadores y muchos lisiados industriales han vuelto a ganarse la vida en su trabajo.

En aquellos casos con que los efectos cosméticos de la incisión clásica de Codman es de importancia particular para el enfermo, el autor opta por una incisión horizontal conforme a los plieges naturales de la piel. Esta incisión, aunque no permite la exposicion de la bolsa tan bien coma la de Codman, cicatriza mejor.

COMPLICACIONES

Nunca ha habido infeccíon en esta serie de casos, sin embargo el dolor después del tratamiento con agujas ha sido insoportable para algunos pacientes. El autor recomienda que se le advierta al enfermo que puede sufrir dolor fuerte después del tratamiento. Así el paciente no se decepciona.

Hemos visto apenas dos casos de hombros congelados despues de la cirúgia. Nosotros creemos que la ausencia relativa de esta complicación obedece a nuestro hincapié en los ejercicios con el brazo colgado más bien que al uso de los compuestos esteroideos. Un enfermo tuvo una reacción alérgica violenta a la novocaina. Este enfermo sufrió dolores articulares generalizados, pérdida de peso, y otros síntomas parecidos a los de la artritis reumatoidea por casi un año después.

Las recidivas en casos de tendinitis calcificante aguda que han sido sometido a la decompresión del depósito son raras. (3%). Sin embargo, cuando se dejan dep;sitos calcificos puede haber ataques de dolor agudo que simulan recidivas.

CONCLUSIONES

1. No han habido cambios mayores ni en el entendimiento ni en el tratamiento de la tendinitis calcífica en los últimos diez años. Los esteroideos se usan pero no han mejorado en forma definitiva los resultandos en casos agudos cuando se usan con o sin los procedimientos quirúrgicos. Estos compuestos sí son efectivos en el tratamiento de los casos benignos, los crónicos o en las lesiones subagudas.

2. Con la cirugía se obtienen mejores resultados en los casos agudos y subagudos. El tratamiento con agujas es satisfactorio y a menudo preferible en los casos agudos.

3. El uso de rayos-X, diatermia, ondas ultrasónicas y otros agentes físicos para acelerar la decompresión de las masas calcíficas no es efectivo y se debe dejar para aquellos casos agudos en que los metodos más directos se contraindiquen o sean indeseables. El uso de estos agentes tiene solo valor psicológicos.

4. La tendinitis calcificante aguda y dolorsa y con tensión es un problema muy distinto al caso crónico o subagudo con poca o ninguna tensión interna. Las estadísticas que se acumulan sin separar estos dos grupos no tienen casi ningun valor. La condición aguda respondera el tratamiento que resulte en compresión o se reventará espontaneamente. En un alto porcentaje de las lesiones agudas el deposito calcífico desaparecetá permanentemente. La lesión crónica no responde bien a ningun tratamiento y raras veces desaparece sin tratamiento quirúrgico. Los que digan que la tendinitis calcífica se alivia sola se refieren por fuerza solo a la lesión aguda.

5. La amputación del margen irritante del acromio en las lesiones crónicas puede ser muy beneficiosa.

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ANNOUNCEMENT
1960 ANNUAL MEETING

American Academy of General Practice Category I credit, 12 hours, 1960 annual meeting, Scottsdale.

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The rate of first admissions to mental hospitals for paresis, a complication of syphilis, has dropped from 4.7 per 100,000 population to 0.5 since the antibiotics were introduced. In spite of such figures, according to Health Information Foundation, the problems of venereal disease in the U. S. are far from solved, chiefly because of public apathy and ignorance.

* * *

Despite sharp drops in the incidence of venereal disease since the development of antibiotics, an estimated 60,000 cases of syphilis and 1,000,000 of gonorrhea are still acquired each year. "Complete elimination of these diseases," says Health Information Foundation, "is at this point far from achieved."

ARIZONA MEDICAL ASSOCIATION
ANNOUNCEMENT
ORIGINAL PAPERS — 1960 ANNUAL MEETING

April 1st is the deadline for accepting papers to be judged by the Scientific Assembly Committee to be presented during the 1960 annual meeting in Scottsdale, the award for the most original contribution to be a bronze plaque which will be presented at the president's dinner dance.

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News Item ....

Dr. J. H. McCurry, of Cash, Ark., advises that he has the approval of the American Medical Association to organize a Fifty Year Club within the AMA. Dr. McCurry is anixous to hear from physicians who have been in practice fifty years or more who desire to become members of this club, giving their name and a complete address.

The first meeting is to be held in Washington, D. C. at the Clinical meeting November 29 to December 2, 1960.

The Value of Visual Field Examination in the Diagnosis of Pitutuary Tumors

Thomas L. Royce, M.D.

VISUAL field defects which are associated with pituitary tumors are probably the most generally recognized of all visual field abnormalities.

The failure of many of us in medicine, which includes some in ophthalmology, to utilize visual field studies in the diagnosis of pituitary tumors is responsible for the marked visual losses which occur far too frequently in these cases. Earlier diagnosis followed by the proper definitive therapy will result in a much more favorable visual prognosis. It must be remembered that the diagnosis of pituitary tumors cannot be made solely by a visual field examination which may indicate chiasmal involvement. Signs of pituitary dysfunction as occurring in acromegaly, gigantism, and Frohlich's syndrome are well recognized.

The radiological findings are extremely pertinent — usually the sella turcica is enlarged and the clinoid processes are eroded from below and on occasion the floor of the sella may disappear.

The most important ocular complaints have to do with failing vision and are frequently associated with headaches. Visual symptoms consist mostly of impairment of central visual acuity and visual field defects.(1)

Let me briefly review the course of the optic nerve fibers in the chiasmal region. Wilbrand's(2) studies, done many years ago, picture the chiasma as being composed of 3 layers. The upper layer fibers are from the upper quadrants of the retina; non-crossing fibers outnumber the crossing fibers. On the middle layer the crossing fibers are largely from the upper nasal quadrants of the retina; the non-crossing largely from the lower temporal quadrants; the numbers of crossing and non-crossing fibers are approximately equal. The lower chiasmal layer is composed of crossing fibers which arise in the lower nasal quadrant of the retina and loop forward into the optic nerve of the opposite side before they turn backwards to enter the optic tract.
terns distributed over different sections of the

It is this bundle which is usually interrupted first by a pituitary tumor pushing against the lower and anterior portion of the chiasma. Defects produced by pituitary tumors are due to pressure on the chiasma. Besides obstructing the function of the nerve fibers, there is also interference with the blood supply, and large tumors may push the chiasma against rigid neighboring structures as the anterior part of the circle of Willis and also extend into the area of the cavernous sinus where the 3rd, 4th, and 6th cranial nerves may be involved.

There are many different types of equipment used for demonstrating visual field defects. Most ophthalmologists use a Ferree-Rand type perimeter for peripheral field examinations with a distance between the eye and the test object of 330 millimeters. Rucker(3) emphasized the value of early visual disturbances in localizing pituitary tumors.

The tangent screen is usually used for central field studies. Central field examination is much

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Presented at Annual Meeting Arizona Medical Association, Chandler, Arizona, April 28 to May 2, 1959.

more informative than peripheral field studies. On many occasions where the peripheral fields are normal, small defects can be detected on tangent screen studies using 1 mm, 3 mm, and 5 mm white test objects. The examination is usually performed at a distance of one meter. Studies with the tangent screen are so informative until there is little need for peripheral field studies. The principle difficulty with visual field examinations is the lack of enthusiasm among many ophthalmologists to do visual field studies.

In order for disease affecting vision to be diagnosed early, physicians in all categories of practice have 2 types of visual screening tests which can usually uncover visual defects. The central vision can be determined by the use of the Snellen Chart and the visual field defects can be determined by the confrontation method which is a very gross technique and will only disclose large field abnormalities. Even so, this test alone which takes less than 2 minutes to perform can be very valuable to the medical practitioner. There is another technique that can be performed by the medical diagnostician in exposing visual field defects — the multiple target visual field screener.

Visual field screening has the advantage of detecting many of the great numbers of diseases that affect the retina, the optic nerve and the higher visual pathways and visual cortex. It is true that in some of the early stages of disease causing visual field defects these defects cannot be detected in all instances.

The recent introduction of the Harrington-Flock Multiple Pattern Field Screener* has greatly stimulated interest in visual field screening. This device is a multiple pattern method of visual field examination based on the principle of flash presentations of simple test patterns distributed over different sections of the visual field. The examinee is to state the number of dots or crosses which he can detect when the examiner flashes them. This test can be done on 5 year old children. Generally, children respond quicker than old patients. Most false negative and false positive responses are in the older age groups. The degree of attention and alertness affects the responses of the examinee. This test can be completed in less than 5 minutes and office personnel, other than the physician, can be taught to perform this examination. Poor visual acuity does not hinder the testing if due to refractive errors. However, subnormal vision if due to disease, as cataracts, may cause faulty response.

CASE RECORDS

Fig. 1. Mrs. A. S. — Pituitary tumor.

A 32-year old white female who was in an auto accident when 15 years old, injuring eyes and almost completely losing right eye. Vision began getting dim and she was fitted with glasses which she has had changed through the years; but lately she has noticed that change in glasses would not improve vision. She has also had a rapid gain in weight in the past three years, and cessation of menstruation since February 1946. Headaches frequently associated with vomiting has occurred during the past 5 years. Vision has become seriously impaired in the past year.

X-ray of skull revealed complete erosion of the dorsum sella and posterior clinoid processes with erosion of anterior clinoid, and depression of floor of sella into sphenoid sinus.

Visual field examination revealed a bitemporal hemanopic defect with complete loss of temporal field, right eye. Fundus examination revealed no evidence of optic atrophy. Given X-ray therapy.

Fig. 2. Mrs. D. A. F. — Chromophobe adenoma of the pituary gland.

A 33 year old white female who has complained of headache and some visual difficulty for many years, and which has bothered her more during the past year. At present she states that her headaches are associated with some holes in visual fields. There is some blurring of vision. She has had irregular menstrual periods since age of 17 years, and frequent periods of amenorrhea lasting several months. She menstruated 2 months ago, for the first time in two years.

X-ray of skull reveals ballooning of the sella turcica with the floor being depressed more on right (consistent with chromophobe adenoma). Visual field examination reveals bilateral superotemporal quadrantic defects. Fundus examination reveals no evidence of optic atrophy. The treatment consisted of irradiation using the betatron irriadiator.

Fig. 3 and 3A. Mr. F. J. D. — Pituitary tumor.

A 42 year old white male who complained of visual difficulty of three months' duration. He was fitted with glasses but the vision did not improve. The sella turcica is considerably enlarged and the dorsum cannot be recognized.

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*Harrington-Flocks Multiple Pattern Visual Field Screener is manufactured by Burton Manufacturing Co., Santa Monica, California. The Multiple Target Screener is manufactured by Roberts Instrument Co., Moberly, Missouri.

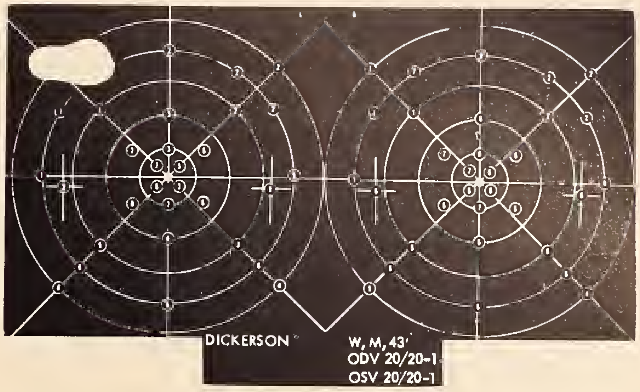
X-ray of skull revealed considerable enlargement of the sella turcica. Visual field examination showed a superior temporal defect, left eye. There was pallor of the left disc.

Fig. 4. Mr. W. D. – Pituitary adenoma.

A 59 year old white male who had been complaining of failing vision during the past year. Right eye vision: 20/200-1; Left eye vision 20/60. Right eye tension: 17; Left eye tension 17. Fundus examination revealed definite pallor of both discs and moderately advanced macula degeneration, left eye.

Visual field examination reveals bitemporal defects with large centrocaecal scotoma, left eye, which was thought to be due to macula degeneration.

X-ray of skull reveals enlargement of the sella



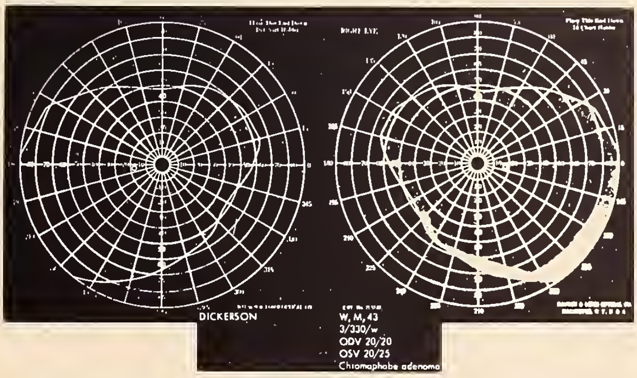
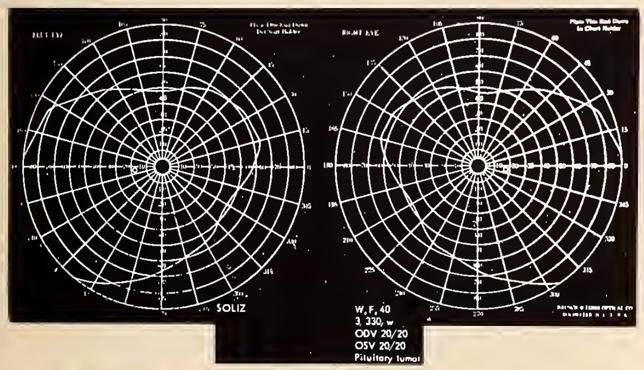


Fig. No. 3A



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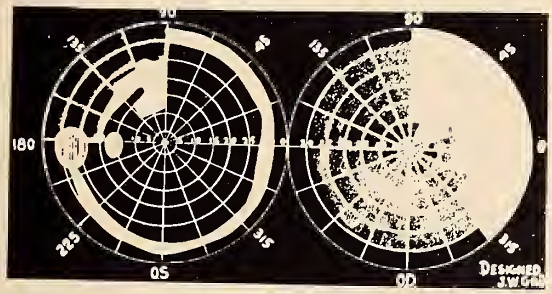

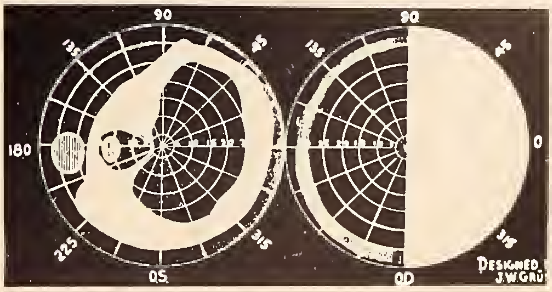

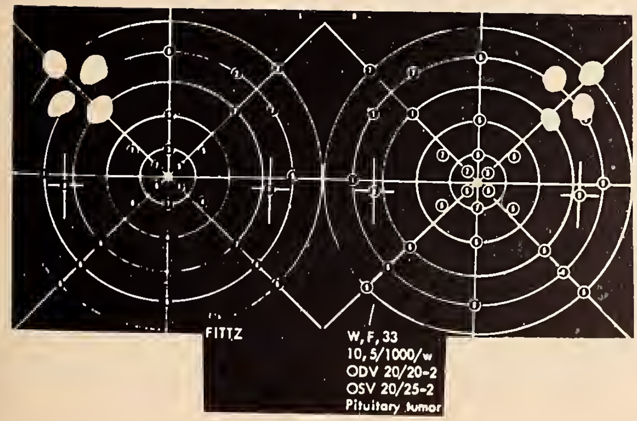

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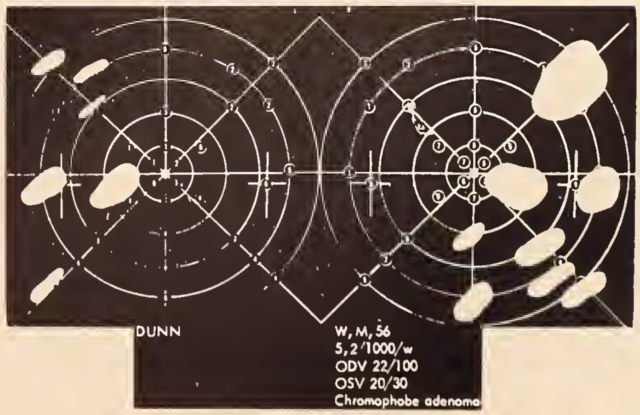


Fig. No. 4

with erosion of clinoids. The tumor was removed surgically and found to be chromophobe adenoma. There has been no further deterioration in visual fields and slight improvement in central visual acuity since surgery.

Fig. 5. Mrs. P. S. C. — Pituitary tumor.

A 31 year old white female who was treated in 1950 for symptoms thought to be chromophobe adenoma. Good regression was obtained, but again in 1957, signs of progression were noted, so surgical extirpation was performed. Eye examination January, 1959, reveals field defects occupying more than one-half of the visual fields bilaterally. Fundus examination reveals bilateral optic atrophy. X-ray therapy was given in addition to previous surgical treatment with only slight improvement in visual fields.

Fig. 6. Mr. J. A. B. — Pituitary tumor.

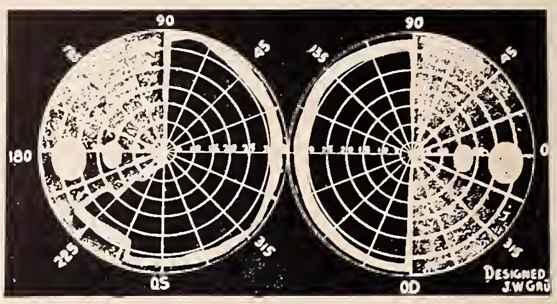
A 39 year old white male who developed severe headaches in early morning, about 8 to 10 years ago. Later complained of visual symptoms, described as "glariness everywhere he looked." After this, noticed partial loss of vision in right temporal field. By 1954, he had lost complete vision in left eye. He was operated for pituitary tumor followed by X-ray therapy. Vision did not improve. Now he has total loss of vision in left eye and loss of vision in temporal field, right eye. In October 1955, he had a seizure of grand mal type, another in June 1956.

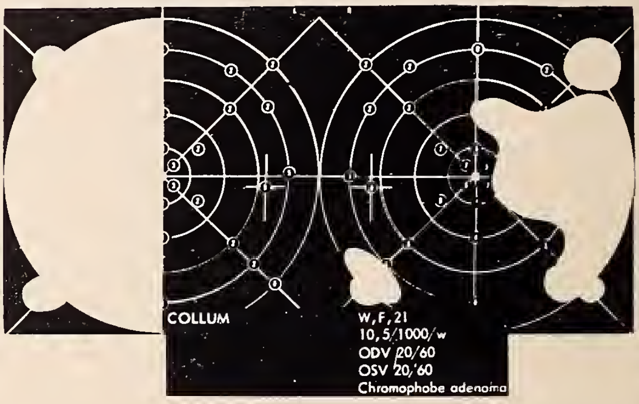
Ophthalmoscopic examination reveals complete optic atrophy, left eye, and partial optic atrophy, right eye.

Fig. 7 and 7A. Mr. M. A. M. — Pituitary tumor.

A 37 year old white male who began having trouble with vision in left eye the past eight years. He was fitted with glasses which did not help vision. Hat size increased from 6¾ to 7⅝. Shoe size increases about ½ size a year since then. He has had headaches for the past six to eight years. Hands have been growing and tongue has become thick and heavy. He complains of easy fatigability and low energy level. He developed definite blind spot in left visual field.

X-ray of skull revealed marked expansion of the sella turcica, thought to be the pituitary tumor, (eosinophillic adenoma). Visual field studies revealed bitemporal central field defects with no involvement of temporal field defects. Fundus examination revealed no evidence of optic atrophy.





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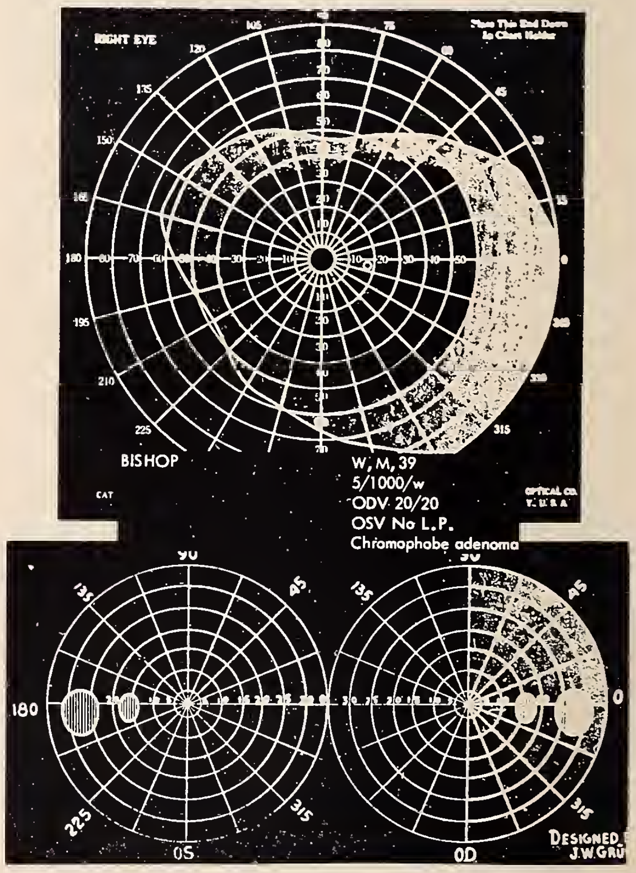


Fig. No. 6

Fig. 8 and 8A. Mr. O. H. – Pituitary tumor.

A 29 year old white male, who at the age of 10, had visual difficulty at which time he developed temporary visual disturbances which lasted three weeks. This was associated with headaches of frontal and fronto temporal distribution which were intermittent, occurring several times a week and lasting several hours. In 1952, again developed headaches and had some decrease in visual acuity. Headache continued for about 2 years, at which time he was fitted with glasses which helped vision. He eventually lost all central vision in right eye. Fundus of right eye presents slight optic atrophy. X-ray of skull showed enlargement of sella turcica consistent with pituitary adenoma of the chromophobe type.

Visual field examination revealed complete temporal hemianopic defects, both eyes. Fundus examination revealed bilateral disc pallor. X-ray therapy resulted in slight improvement of visual fields during six months period following therapy.

Fig. 9. Mrs. M. L. – Pituitary tumor.

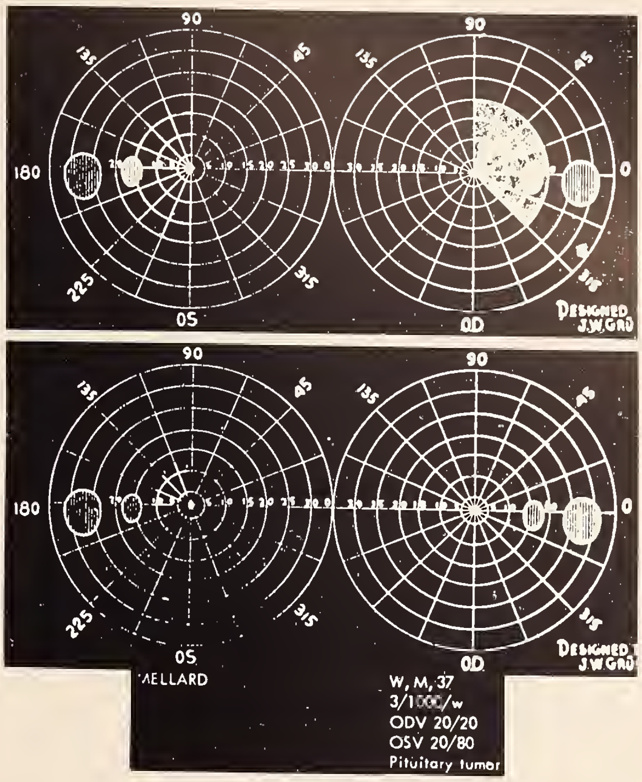
A 52 year old white female who states that in July 1956, when attempting to thread a needle, she noticed that her vision would dim, but thought this was due to improperly fitting glasses. In November, 1956, she began having severe band-like headaches which would wake her during the night, and were localized in the right frontal area. The eyeballs would ache, and a marked blurring of vision occurred during these attacks. On December 21, an episode of severe nausea and vomiting lasted all during the night. Examination December 31, 1956, revealed vision correctable to 20/200, right eye, and 20/15, left eye.

Skull X-rays reveal enlargement of sella turcica compatible with pituitary adenoma. Visual field studies reveal bitemporal peripheral field defects in both eyes.

There is slight optic atrophy, right eye. Therapy consisted of surgical removal followed by X-ray therapy.

Fig. 10 and 10A. Mrs. O. A. H. – Pituitary tumor.

A white 58 year old female, who states that about four weeks ago, she developed light pain in left eye which persisted for one week, after which she noticed decreasing clarity of vision of left eye, with redness of conjuctiva. She developed "double and triple vision." At onset, the left eye was rotated laterally and fixed in this



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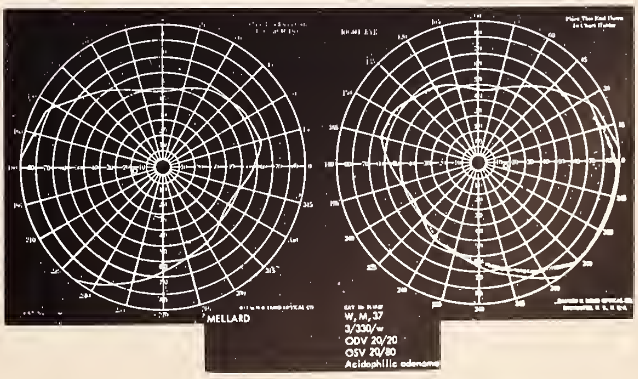


Fig. No. 7A

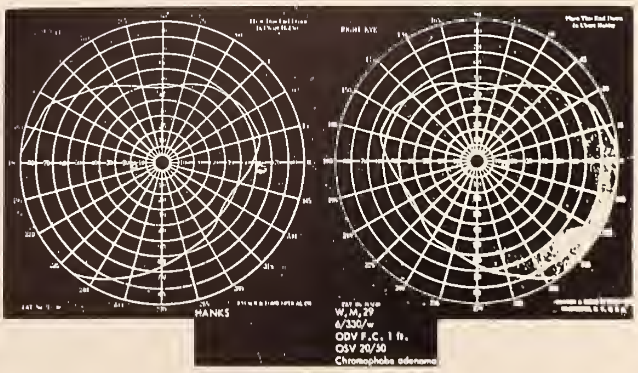


Fig. No. 8

position for 24 hours, after which the extraocular muscle function apparently became normal.

Visual field examination, both peripheral and central, revealed no visual field defects. Fundus examination showed no abnormalities. Examination of extraocular muscle revealed a partial third nerve palsy, left, which was attributed to extension of the pituitary tumor to the left of the dorsum sella.

X-ray therapy resulted in complete return of left third nerve function.

DISCUSSION

In over 100 cases having visual field defects who were tested on the multiple target screener only one significant defect was missed. This compares favorably with a recent series directed by William Havenan, M.D.,(4) in which he obtained false negative of 1.7%. False positives in my series averaged 3%, most of which had some eye disease which warranted ophthalmologic care, as cataracts and superficial infections. This percent of false positives has decreased as our technique in testing has improved.

Those patients who come to physicians with complaints of headaches, dizziness, and visual disturbances should be screened as a routine procedure. The equipment is inexpensive and undoubtedly will lead to the diagnosis of many central nerve system disorders and usually at an earlier time, which would afford a better chance for effective treatment.

In the treatment of pituitary tumors it is the problem of the neurosurgeon to decide whether X-ray therapy or surgery is to be employed. Usually these cases can best be handled if there is close team work between the radiologist, neurosurgeon and ophthalmologist. Generally speaking, X-ray therapy is used in cases where there is no severe loss in either central vision or visual fields and surgery is used where visual loss is advanced and where there is evidence of cyst formation. Again the mode of treatment depends on the neurosurgeon, some of whom use the surgical approach in all cases of pituitary tumors even if there is only minimal visual involvement.

In all instances, and especially where X-ray therapy is employed, the ophthalmologist should do repeated central visual field studies. In cases receiving X-ray therapy these studies should be repeated at 7 day intervals until the therapy

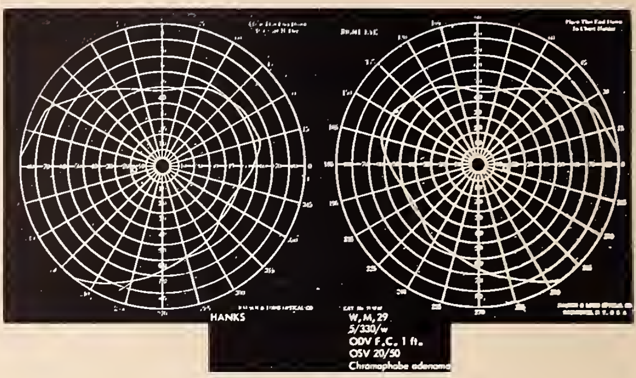
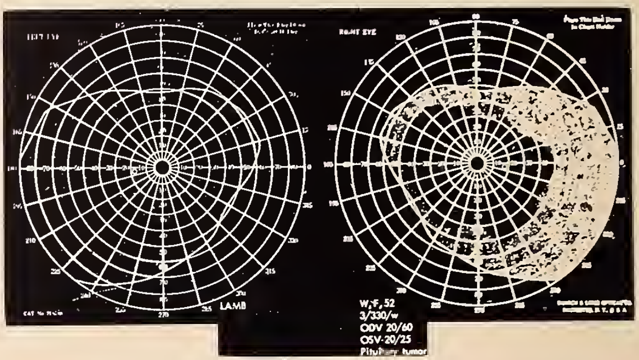


Fig No. 8A



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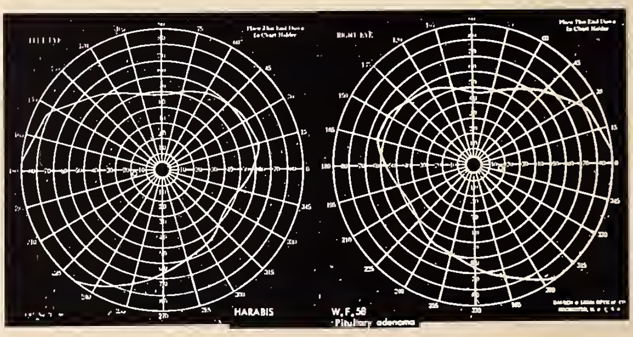

Fig. No. 10

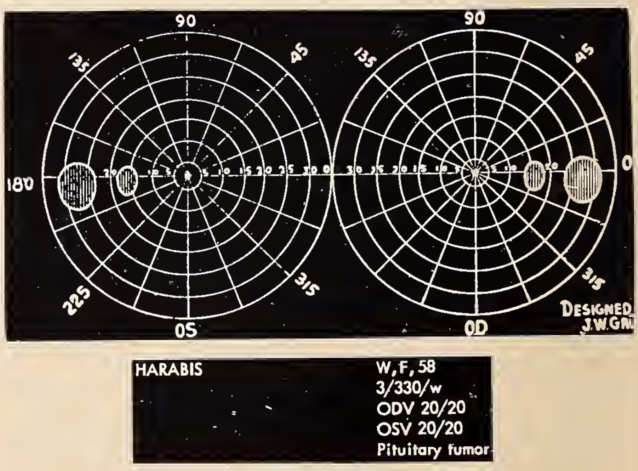

Fig. No. 10A

has been completed and then monthly for the first year following treatment. If there is loss in visual fields during the time active treatment is being given, the radiologist is advised in order that he may diminish dosage or frequency of treatment and in cases of severe field encroachment it may be necessary to discontinue X-ray therapy. Visual field loss during the time irradiation is being given is usually due to sudden increase in the size of the tumor due to edema.

If visual loss continues surgery should be considered. Lesions responsible for failure are meningioma, craniopharyngioma, aneurysm and pituitary carcinoma.

Improvement from irradiation occurs most frequently during the first and second years after treatment.(5) In a series of cases receiving radiotherapy for pituitary adenoma, Chamlin concluded that one should allow 4 to 6 months after concluding treatment before assuming that no improvement will take place and at least 2 to 3 years before judging the total amount of improvement.

The color of the optic discs is important in the prognosis of visual recovery following treatment of pituitary tumors. Usually the optic discs will remain pink until visual loss has been present for several months. Most patients with pituitary tumors have optic disc pallor, the amount usually being proportionate to the amount and duration of the visual loss. Generally when the discs are pink despite the amount of visual loss the chances of visual improvement are good. When visual loss is great with minimal pallor, improvement may be expected; and when there is marked pallor, improvement is not to be expected.

CONCLUSIONS

Emphasis must be placed upon the early diagnosis of pituitary tumor in order to obtain the best results. This can only be achieved by the awareness of all medical practioners.

The determination of the central visual actuity and visual field screening should be done routinely — especially on those patients complaining of visual disturbance, headaches, and dizziness or other complaints referrable to the central nervous system.

Multiple target visual screeners are effective in uncovering visual field defects, and can be operated efficiently in any physician's office.

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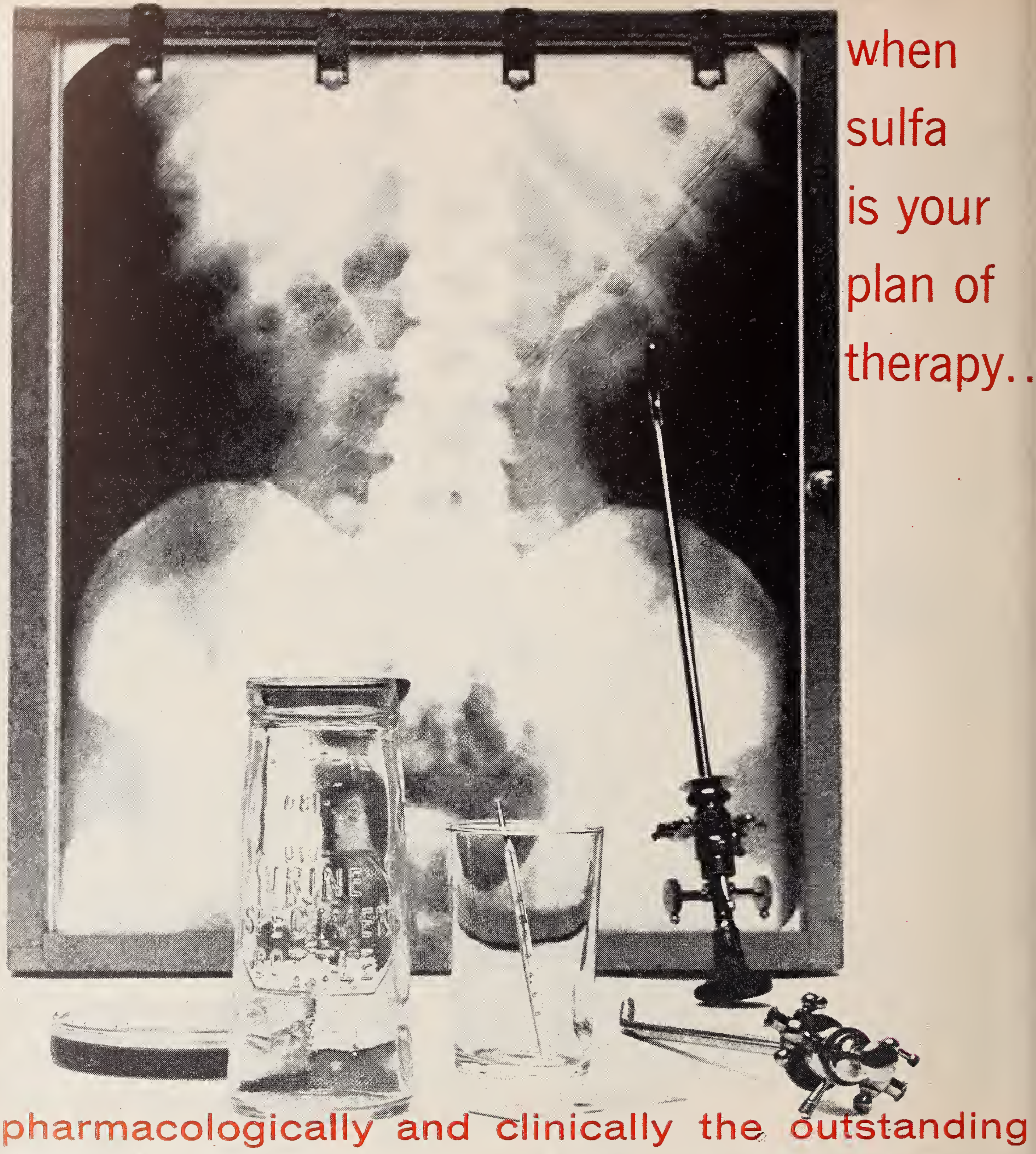
ANNOUNCEMENT
1960 ANNUAL MEETING

American Academy of General Practice Category I credit, 12 hours, 1960 annual meet, Scottsdale.

Although the incidence of venereal disease is still high, 30 infants in this country died from congenital syphilis last year, while 3,460 would have died if the 1930 rate had continued, according to Health Information Foundation.



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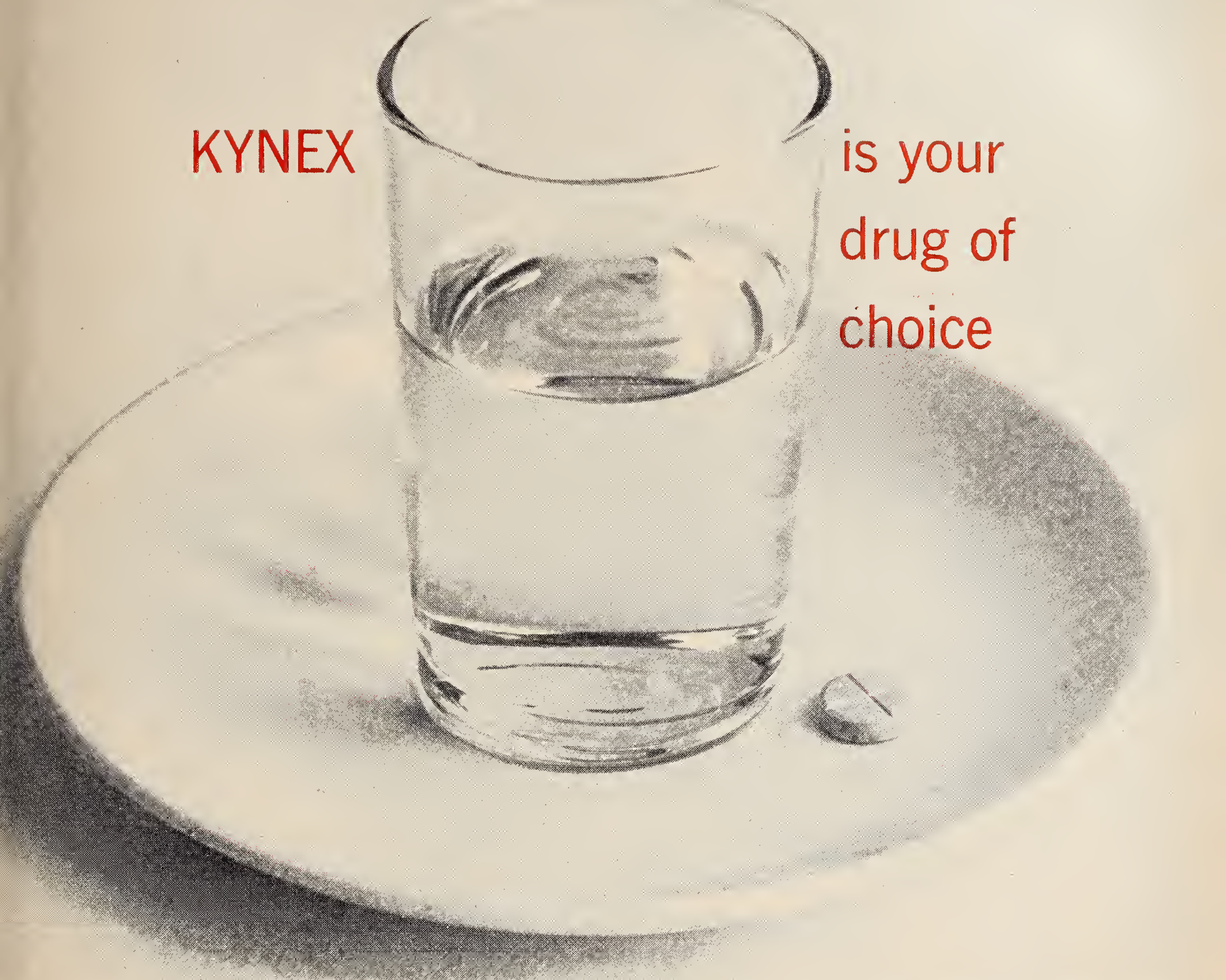

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Diagnosis and Treatment of Diseases of the Parathyroid

GLANDS — PART I

Sherwood E. Feinberg, M.D.

Fort Huachuca, Arizona

HISTORY

THE HISTORY of the parathyroid glands and the profession's realization of their surgical importance represents a fascinating and comparatively young chapter in the book of medical progress. The parathyroids, in less than a hundred years, have become extremely challenging endocrine glands and have taxed the ingenuity of internist and surgeon alike.

Late in the 19th century, the pea sized bodies which had escaped detection for many centuries were well described in Upsala, Sweden, by Ivar Sandstrom.(99, 151) That he, too, was surprised to find a histologically distinct structure in the neck of man is reflected by the following passage from his original paper: "So much the greater was my astonishment therefore when, in the first individual examined I found on both sides at the inferior border of the thyroid gland an organ the size of a small pea, which, judging from its exterior, did not appear to be a lymph gland, or an accessory thyroid gland, and upon histological examination showed a rather peculiar structure."(98)

A number of years were to pass before the parathyroid gland was attacked surgically but there were many contributions in the intervening time.

In 1891, osteitis fibrosa cystica of Von Recklinghausen or osteitis fibrosa cystica multiplisata was first described.(3) The connection between this striking disorder of bone and the parathyroid gland went unrecognized at the time.(110) In 1901, Loeb recognized the effect of altered concentrations of serum calcium on neuromuscular irritability.(111) Jacob Erdheim, at the turn of the century, reported the first acceptable case of adenoma of the parathyroid. A year later, in 1904, Askanazy linked a parathyroid neoplasm to bone disease and following this time the association of parathyroid enlargement and cystic bone disease began to be appreciated.(110) In 1906, Erdheim described compensatory hyperplasia of the parathyroids in osteomalacia and he felt that the parathyroid changes were compensatory and most likely beneficial. Post mortem examinations in cases of osteomalacia repeatedly described what was felt to be compensatory parathyroid hypertrophy, while autopsies in Von Recklinghausen's disease of bone revealed a single parathyroid adenoma as a constant finding. Because Erdheim said that the parathyroid hyperplasia is secondary in ostemalacia, most continued to think of the parathyroid tumors as secondary and probably of benefit to man. At the time, only a few considered that what was true for osteomalacia might not be true for Von Recklinghausen's disease of bone.(3) Erdheim, in 1907, extirpated the parathyroid glands of rats and discovered that the role of the glands was to control the metabolism of calcium and phosphorus.(99)

Schlagenhaufer, in 1915, differed from the majority view and openly wondered why in Von Recklinghausen's disease of bone the parathyroid enlargement involved only one gland which would be difficult to explain if the hypertrophy were secondary. His observations set the stage for the surgical first of Felix Mandl which was to occur in 1925 but more physiologic advances were made prior to that time. Biedl, in 1916, showed that the parathyroids had an internal secretion by transplanting the parathyroids of a dog into the same animal's spleen and later performing a thyroidectomy. Tetany did not occur until months later when splenectomy was performed and fatal tetany occurred within 24 hours of removal of the spleen.(98) Collip, in 1925, and Hanson, independently, in 1923, reported the isolation of a physiologically active extract of the parathyroid gland, the parathyroid hormone. (50, 79)

Felix Mandl, in 1925, resolved the theoretical controversy which existed due to the differing views of Erdheim and Schlagenhaufer.(113) Mandl, in step with the concepts of that period, was not certain whether a parathyroid adenoma was compensatory or whether it actually was the cause of osteitis fibrosa cystica. Mandl had as a patient a 38-year-old man with classical osteitis fibrosa cystica. He gave his patient extracts of parathyroid glands of animals but this was not successful. Again, in line with the views of Erdheim, he transplanted into his patient the parathyroid glands from a man who had just died. This attempt, too, was unsuccessful. Finally, in July of 1925, Mandl operated and removed a parathyroid adenoma from the neck of his 38-year-old patient. Following surgery, the man's bones recalcified and he showed great general improvement. Since this was a heretofore fatal disease, the riddle was solved.

Although Mandl's feat in 1925 was the first successful case of a cervical dissection with the express intent of removal of a parathyroid neoplasm, it should be mentioned that a parathyroid adenoma had been removed in the United States in 1924 by Dr. Charles Richardson of Macon, Georgia. Richardson operated because of a palpable cervical tumor, thought preoperatively to be a thyroid growth, which on removal turned out to be a parathyroid adenoma.(98, 142, 88)

Great strides have been made in the diagnosis and surgical treatment of parathyroid disease since 1925. The criteria for the detection of parathyroid overactivity have been revamped. Historically, a variety of skeletal symptoms and findings: generalized osteitis fibrosa, bone cysts and tumors, pathologic fractures, and other skeletal disorders were the first recognized indications of parathyroid overactivity.(162) Churchill and Cope, in 1936, recognized the fact that diagnostic emphasis was shifting to cases of nephrolithiasis. They considered cases with bone involvement as "museum pieces" and pointed out that the majority of the cases would be found in patients with urinary stones.(47) Severe hyperparathyroidism without bone disease was first demonstrated in 1937 by Albright, Sulkowitch, and Bloomberg.(10) Tremendous advances have since been made as is evidenced by the fact that cases have been reported without nephrolithiasis or bone disease, and most recently, with only minimal chemical abnormalities.(70)

Hyperparathyroidism can no longer be considered a rare disease. In fact, as of 1953, more than 700 cases of hyperparathyroidism had been reported.(82) All this has been accomplished in less than three decades from the time of Felix Mandl's surgical triumph.

PARATHYROID ANATOMY AND EMBRYOLOGY

The parathyroid glands are yellowish-brown bodies, the number and position of which may be variable.(67, 83) The color varies with the amount of fat present. In youth and middle age, the glands are usually yellowish, while in old age they are browner because of loss of fat. The glands may be pink to coffee-brown in the prepubertal period. A superior and an inferior parathyroid are usually present bilaterally, occupying any position from the back of the pharynx to the superior mediastinum. They are about the size of a small pea and usually lie between the posterior aspect of the lateral lobe of the thyroid and the pretracheal lamina of the pretracheal fascia. The parathyroids may lie entirely or partially within the substance of the thyroid gland, this being particularly true of the superior glands, which are then easily removed in thyroidectomy. The anatomy of the inferior parathyroids is more complex than that of the superior, and the inferior glands may lie in intimate relationship to the inferior thyroid arteries and veins; however, their position is variable. The superior and inferior parathyroid glands, as a rule, receive their blood supply from the thyroid vessels. The inferior thyroid artery is the major vessel of supply.(98)

The parathyroid glands, like the thyroid, develops from the pharynx, from the walls of the third and fourth branchial pouches. They are usually paired and are four in number; right and left parathyroids III derived from the third branchial pouches, and right and left parathyroids IV derived from the fourth pouches. Early in their development, the parathyroids IV become associated with the developing thyroid gland, and as the thyroid gland reaches its definitive position in the neck these parathyroids tend to remain associated with the upper poles of the thyroid and they are known as the superior parathyroids.

The parathyroids III are associated in the early stages of their development with the thymus and they tend to migrate into the neck with the thymus. Usually, as the thymus passes the thyroid to proceed on downward into the thorax the parathyroids III become detached from the thymus and associated more or less closely with the lower pole of the thyroid gland, hence they are frequently designated as the inferior parathyroid glands.

The region in which a given gland may be found is supposedly predictable. This furnishes the purely anatomical basis for the surgery of hyperparathyroidism.(48, 52, 176) That the supposed ease and certainty with which a parathyroid may be identified has been overemphasized has been indicated by Hayes Martin.(114)

The migration of the superior parathyroid gland is not great during the developmental stage. On the basis of embryological migration the gland should lie between the upper level of the larynx and the lower pole of the thyroid gland in the space bounded anteriorly by the deep layer of the middle cervical fascia and posteriorly by the prevertebral fascia. The gland is situated well posteriorly and may lie on the pharynx or esophagus rather than the thyroid gland, although, as has been indicated, it may be entirely or partially situated within the thyroid substance. The usual position of the gland is not near the superior pole of the thyroid, but at about the junction of the middle and upper thirds of the lobe. The superior parathyroid is found more easily than the inferior gland due to its limited embryological migration. It is important to note that the superior gland lies in a plane dorsal to the recurrent nerve and inferior thyroid artery. The inferior gland, which originates above the superior gland, migrates caudally along with the thymus and lateral to the developing superior parathyroid and thyroid glands. It may be carried completely into the anterior superior part of the mediastinum along with the developing thymus. The inferior gland lies in a more ventral plane than the superior and is usually found anterior to the recurrent laryngeal nerve and inferior thyroid artery. The inferior parathyroid may be found in the cervical fascia at any level from the upper border of the larynx to well into the mediastinum. The inferior parathyroids commonly lie below the level of the thyroid gland. The usual locations of the inferior gland are anterior to, but near the inferior thyroid artery on the inferoposterolateral surface of the thyroid and also caudad to the thyroid in relationship to the inferior thyroid veins.

Besides their positional variability on an embryological basis, the parathyroids, especially when enlarged, may be displaced caudally by the same forces that displace low lying thyroid adenomata into the thorax. If the parathyroid is situated well posteriorly, the displacement is toward, or into the posterior superior mediastinum, and if situated more anteriorly it may be displaced toward or into the anterior superior mediastinum. An inferior gland may be displaced either into the anterior superior or posterior superior mediastinum, depending on its position before displacement.

As previously mentioned, the parathyroids usually receive their blood supply from the thyroid vessels; however, when a gland develops in the mediastinum it may get its blood supply from any local vessel. Parathyroids which develop in the neck and are subsequently displaced into the mediastinum remain attached to the thyroid vessels, thus the displaced gland may be detected by dissecting the vascular pedicle into the thorax. All parathyroids in the posterior superior mediastinum are said to have pedicles, while those in the anterior superior mediastinum may or may not have pedicles. Since adenomas in the posterior superior mediastinum always have pedicles and also because of the embryological fact that a normal parathyroid gland is never found in the posterior mediastinum, one may infer that there is such a phenomenon as mechanical displacement.(52, 98)

An estimated 2 to 3% of parathyroid adenomas have an intrathyroid location.(25) Parathyroid tissue may also occur within the substance of the thymus. Brewer was the first to report parathyroid tissue in the thymus in adults although, as indicated in Brewer's report, Erdheim had earlier reported parathyroid tissue in the thymus of cretins and Duperie in routine examination of the thymus of infants found four parathyroid inclusions in one hundred cases examined.(33) In 322 parathyroid adenomas presented by Norris, 9 were intrathymic.(127)

Reported figures of parathyroid adenomas that are completely mediastinal vary from 7 to 17%.(23, 52, 127) Parathyroids may be found in other unusual positions in the neck either due to atypical embryogenesis or to mechanical displacement.(98)

The surgical significance of atypical parathyroid locations will be discussed in another section.

INCIDENCE OF HYPERPARATHYROIDISM AND DIAGNOSTIC CLUES

The following is the clinical classification of hyperparathyroidism according to Albright:(4)

(1) Renal disease only.

(2) Bone disease only.

(3) Both renal and bone disease.

(4) Neither renal nor bone disease.

The last few years have demonstrated beyond doubt that all four types occur; however, the incidence of each is changing probably due to increased awareness of hyperparathyroidism by physicians. Now the diagnosis is being made before major metabolic abnormalities have occurred.

Primary hyperparathyroidism may occur at any age and cases have been reported from the period of early childhood to senescence. Anspach and Clifton have reported a case of a probable parathyroid adenoma at the age of 3 months; however, histologic proof of hyperparathyroidism was not obtained.(13) Crawford, Stefanelli, and Alvarez have reported a well documented case of a parathyroid adenoma in a two-year-old child.(54) The maximum age incidence is between 30 and 60 years.(110) Primary hyperparathyroidism occurs approximately three times more often in females than in males; however, the reason for this sex predeliction is not readily apparent. This disorder may run a protracted clinical course and indeed there are numerous cases on record of people having had symptoms of hyperparathyroidism (usually renal colic) for periods of 30 years or more.(22, 28, 85) That hormonal factors may be of importance is indicated by an increase in the female incidence of hyperparathyroidism after the menopause.(127, 180)

Symptoms due to elevated serum calcium may cause a confusing clinical picture. These may include chronic constipation, fatigue, muscular weakness, polyuria and polydipsia, nausea and vomiting, and symptoms associated with progressive renal insufficiency if the kidneys have sustained damage.(110)

Hyperparathyroidism may be associated with minimal or marked gastrointestinal symptoms. The fourth confirmed case of hyperparathyroidism (1929) had attacks of severe abdominal pain and vomiting which occurred every few weeks prior to parathyroidectomy.(31) Symptoms such as nausea, vomiting, anorexia, and epigastric pain have been recorded by a number of observers.(9, 74, 86, 130) The coexistence of peptic ulcer and hyperparathyroidism is well known. It is thought that the occurrence of peptic ulcer is favored by prolonged hypercalcemia and also by the action of parathormone on the mucoprotein of the gastrointestinal mucosa.(62, 1952) It is felt that hypercalcemia is the principal cause of the gastrointestinal symptoms. Increased serum calcium ion concentration in sympathetic ganglia impedes transmission of afferent stimuli and diminishes efferent discharges in the presence of a constant amount of perfusing acetylcholine.(34) The effect of calcium ion concentration on sympathetic ganglia and the effect of hypercalcemia on reducing neuromuscular irritability supposedly leads to decreased tone of the gastrointestinal tract. Peptic ulcer is thought to be 11 times more common in those with hyperparathyroidism.(21) In the Mayo Clinic series, 24% of patients with proved hyperparathyroidism had at the time of examination, or had had in the past, objective evidence of peptic ulcer or had had operations on the stomach, presumably because of ulcer. An additional 15 to 20% of patients had some ulcer-like symptoms but an ulcer had never been proved.(22) A report from the Presbyterian Hospital in New York gives similar figures. They reported that 16 of 45 patients with hyperparathyroidism had prominent gastrointestinal symptoms. Following parathyroidectomy, the gastrointestinal complaints subsided in 11 of the 16 patients.(162)

The most frequent complication of hyperparathyroidism is precipitation of calcium salts in the urinary tract. This results from the associated hypercalcuria with the formation of calcium phosphate stones in alkaline urine and calcium oxalate stones in acid urine.(1) Roughly 5% of all patients with kidney stones have hyperparathyroidism.(9, 19) Seven per cent of Goldman's patients with nephrolithiasis had parathyroid adenomas.(70) In the case of renal involvement due to hyperparathyroidism, calcium is deposited not only in the parenchyma of the kidney but also in the collecting system so that precipitation of calcium may be found anywhere along the urinary tract such as in the calices, pelves, ureters or urinary bladder. It is well known that calcification of the renal parenchyma results in the gradual impairment of renal function.(110)

In the early days of parathyroid surgery, bone disease was usually the presenting finding and this called attention to the possibility of hyperparathyroidism. About one-third of patients with hyperparathyroidism are said to have sufficient bone abnormality to make the roentgen diagnosis possible.(135) The incidence of skeletal involvement would appear to be steadily decreasing.(70) Symptoms and signs related to the skeletal system may include pain of bones and joints, cystic areas in the long bones and skull, spontaneous fractures, kyphosis, scoliosis, thoracic deformities, deformities of the long bones, and gait abnormalities.(110)

Hyperparathyroidism may present as psychiatric illness(28, 65) and psychiatric symptoms may disappear after the successful removal of a parathyroid adenoma.(12)

Peripheral vascular insufficiency due to arterial calcification may be present as a prominent manifestation of parathyroid hyperfunction. (12, 28, 145)

Recently, attention has been called to the occurrence of pancreatitis as the presenting symptom of previously undiagnosed hyperparathyroidism.(53) It has been suggested that patients with a history of pancreatitis should be screened for hyperparathyroidism. The mechanism thought to be involved when pancreatitis is observed with hyperparathyroidism is the deposition of calcium in the pancreatic ducts with subsequent ductal obstruction.(53) A number of observers have reported pancreatic calculosis associated with hyperparathyroidism; however, it remains to be seen whether the routine screening of patients with pancreatitis will be rewarding.(115, 146, 158)

SECONDARY HYPERPARATHYROIDISM

This condition implies that there is parathyroid hyperfunction secondary to increased demand for more parathyroid hormone.(154) Secondary diffuse hyperplasia may result from calcium deprivation, rickets, osteomalacia, biliary fistulae, chronic jaundice, pregnancy and lactation, multiple myeloma, and chronic renal disease.(160) Chronic renal insufficiency is the usual and most important causative factor in the genesis of the secondary form of hyperparathyroidism.(89)

The initial mechanism in individuals with impaired renal function is a retention of phosphate ion. The rise in serum phosphate depresses the calcium ion to low levels and the parathyroids exhibit a compensatory overactivity in response to the lowered serum calcium.(52) Bone changes in secondary hyperparathyroidism may mimic the generalized osteitis fibrosa of primary hyperparathyroidism; however, bone cysts or giant cell tumors are not seen.(160)

It may be relatively easy to distinguish the primary from the secondary form of hyperparathyroidism if the primary form has not progressed to the point of renal insufficiency. If secondary renal involvement has occurred due to long standing primary hyperparathyroidism, the differential diagnosis may be an impossible one short of surgical exploration and histological examination of the involved glands.

The differential diagnosis of the two conditions is of extreme importance since surgical exploration offers nothing to the individual with secondary parathyroid hyperfunction and it is the treatment of choice in a situation of primary hyperparathyroidism. Cope has reported a case in which autopsy examination revealed a parathyroid adenoma in a patient thought to have secondary hyperparathyroidism. This patient had been denied surgical exploration because of the clinical impression of secondary parathyroid hyperfunction.(98) It is thus abundantly apparent that the differentiation of these two conditions which are therapeutic opposites may be extremely difficult.

The pathological distinction between primary hyperplasia, parathyroid adenoma, and secondary hyperplasia should not be a problem. This subject is discussed in the section on parathyroid pathology.

ACUTE HYPERPARATHYROIDISM (HYPER-HYPERPARATHYROIDISM)

Acute hyperparathyroidism or parathyroid crisis apears to be a very uncommon disorder As of 1956, only fifteen cases had been reported in the world literature.(97) It is quite likely that this condition is more common than the number of reported cases would indicate because the diagnosis is difficult.

The first case of probable parathyroid hormone poisoning was reported by Dawson and Struthers in 1923.(129) This case was highly suggestive but lacked confirmatory data. The case of Hanes, in 1939, in which death occurred, is regarded as the first proved case of parathyrotoxicosis.(78)

Acute poisoning by parathyroid hormone is a well known entity in experimental animals.(158) The mechanism of death in acute parathyroid hormone intoxication is incompletely understood. Causes advanced have been: (a) marked diuresis with resultant dehydration and renal failure; (b) a combination of electrolyte loss and a failure of the brain to utilize glucose in the absence of diffusible phosphorus; and (c) renal inability to filter phosphorus at high calcium levels with precipitation of calcium in areas of localized tissue alkalinity. In support of the latter is the fact that widespread calcinosis occurs in parathyrotoxicosis with especially severe involvement of the kidney.(174)

We are accustomed to thinking of hyperparathyroidism as a chronic disease but it is well to remember that it may be an acute and often fatal disease.(174) Waife gives the following points to consider in the diagnosis of this disorder: when a patient with duodenal ulcer shows intractable vomiting in the absence of pylorospasm or gastric retention; when the vomiting and epigastric pain is aggravated by a high calcium, high phosphorous or alkali intake; when there is marked muscle weakness and lethargy; and when there is terminal uremia with polyuria and polydipsia.(97, 174) Treatment for peptic ulcer in a patient with hyperparathyroidism by administration of milk and alkalis may precipitate parathyrotoxicosis.(145, 146, 147)

It is clear that the recognition of this disorder may represent a difficult problem. The treatment of choice is emergency parathyroidectomy. Of the fifteen cases reported, only two have been treated successfully by emergency parathyroidctomy.(97, 153)

PARATHYROID CARCINOMA

True cases of carcinoma of the parathyroid glands are extremely uncommon.(110) Although more have been reported, as of 1956 there were only twenty-three valid cases.(98) The discrepancy between the number reported and the number of acceptable cases must be explained. The major problem in the classification of cases is that there is extreme difficulty in making a histological distinction between a benign and a malignant tumor. According to Black, the cytology of carcinomas known to have metastasized is so similar to that of clinically benign adenomas that the distinction between benign and malignant tumors is uncertain from a histologic standpoint.(24) He feels, however, that the distinction can be made with some degree of certainty if both gross and microscopic features are considered. It is also of interest that the usual cytologic criteria for the diagnosis of malignancy apparently are of questionable value in the case of parathyroid carcinoma. A series of 14 cases of primary hyperparathyroidism at the Mayo Clinic up to 1942 were reported by Pemberton and Alexander and a diagnosis of carcinoma was made in 13 of these cases and a diagnosis of adenoma in the 14th case. The diagnosis of malignancy was made purely on cytological evidence and it is questionable whether all these represented actual carcinomas since there was no gross evidence of malignancy, no distant metastases, and the patients all thrived following surgery(98, 130) A case report of a malignant course of a microscopically benign parathyroid tumor in which post mortem examination revealed metastatic parathyroid tissue in both lungs lends support to the feeling that the present histological criteria for the diagnosis of parathyroid malignancy are not adequate.(101) It would seem more wise in our present state of knowledge to include under the heading of malignancy only those cases in which after removal of the primary parathyroid tumor there has been either a local recurrence of the neoplasm, a spread of the growth so that contiguous structures have become involved, or metastases to distant organs and tissues. If the aforementioned criteria are adhered to, the number of acceptable cases will be scant.(110)

Parathyroid carcinoma causes an estimated 1 to 2% of hyperparathyroidism.(24) The first acceptable case of parathyroid carcinoma was reported in 1909 by DeQuervain.(57, 98, 110, 126) DeQuervain's case report described invasion of the jugular vein, invasion of the sternocleidomastoid muscle, local recurrence, and pulmonary metastases. Many sites of metastases may occur. An extremely rare situation is a mediastinal parathyroid carcinoma with metastases. This case, too, was first diagnosed as a parathyroid adenoma from its histological characteristics and showed evidence of malignancy several years later by local and distant metastases.(178)

The mechanism of death in parathyroid carcinoma with metastases is usually uncontrollable hyperparathyroidism.(24) There is some question in the literature on the acceptance of nonfunctioning parathyroid carcinoma. Some investigators hold the view that nonfunctional parathyroid carcinoma is a questionable entity,(41, 120) while others feel that functional activity is not necessary for the diagnosis of parathyroid carcinoma.(126)

The treatment of parathyroid carcinoma is surgical and since the probable route of metastasis is to the regional lymph nodes, a radical neck dissection should be done.(98) Janelli wisely reminds that the lesion is rare and that the diagnosis should be firmly established before such an extensive operative course is undertaken.(98) In view of the confusing histological characteristics of parathyroid carcinoma, it would, therefore, appear prudent to require evidence of obvious local spread at time of cervical exploration or later clinical recurrence of the parathyroid tumor before embarking upon a radical neck dissection. Radiation therapy has been used for recurrences, but has not altered the disease process.(85, 98, 126)

DIAGNOSTIC CRITERIA IN HYPERPARATHYROIDISM

The standards used for the diagnosis of hyperparathyroidism have undergone great changes in the last three decades.(70) Bone disease was the chief manifestation of hyperparathyroidism in the time of Mandl but as parathyroid surgery evolved bone lesions became less frequent and the diagnostic emphasis shifted to individuals with renal stones.(47) More recently, attention has been directed to the gastrointestinal aspects of hyperparathyroidism. St. Goar indicates this trend as follows: "Hyperparathyroidism, which has been popularly thought of by medical men as a disease of stones and bones, might be recognized both earlier and more frequently if it were widely regarded as a disease of stones, bones, and abdominal groans."(162) As time has passed, cases of hyperparathyroidism have been unearthed not only without evidence of bone or renal involvement but also with seemingly insignificant chemical abnormalities.(70) It should be emphasized, though, that the diagnosis of hyperparathyroidism usually depends upon a complication of the primary metabolic disorder and it is the unusual case in which the diagnosis is made in the absence of bone disease, urinary lithiasis, or peptic ulceration.

A discussion of the tests utilized in an attempt to establish the diagnosis of hyperparathyroidism follows:

The determination of serum parathyroid hormone concentration would, from a theoretical standpoint, be an excellent method for making a diagnosis of parathyroid hyperfunction; however, there is no direct method of assaying parathormone in the blood. Thus, one must rely on indirect tests which reflect metabolic changes resulting from an overproduction of parathyroid hormone.(154)

An elevated serum calcium is probably the most important diagnostic finding of this disorder.(70) It should be emphasized, however, that the elevation may be minimal or absent. In general, the serum calcium determination is good as a screening test and a value over 11 mg. % is highly suspect.(35) The normal value for blood calcium is 10.0 mg. % plus or minus 1 mgm. %.(154) It is also necessary to know the value of total serum proteins in evaluating a case of suspected hyperparathyroidism since a portion of total serum calcium is combined with protein in the form of calcium proteinate. If proteins are low, the serum calcium might be reported as an erroneous normal value. A nomogram is available to evaluate the serum ionized calcium value in relation to the serum protein level.(117) Though normal serum calcium makes the diagnosis quite unlikely, hyperparathyroidism may occur with a perfectly normal serum calcium value. (64, 116) Goldman feels that one calcium determination is not sufficient if the diagnosis is highly suspect.(69) It is of interest to review the range of serum calcium values in the extensive series of cases reported from the Mayo Clinic by Black and Zimmer.(27) The values for serum calcium in the series varied from 10.1 to 18.4 mg. %. Slight elevations were far more common than extreme deviations from the normal. The value for calcium was less than 11 mg. in 13% of cases and less than 12 mg. in 54% of cases. At the other extreme, values of more than 14 mg. were found in less than 12% of cases. When considering the value of calcium determinations in the detection of this disorder, we must keep in mind the fact that there are many other conditions which may give rise to hypercalcemia. Brenizer lists several important conditions which should be differentiated.(32) Metastatic lesions in bone may produce hypercalcemia, especially following steroid hormone therapy. Though the chemical findings may simulate hyperparathyroidism, the radiologic picture of sharply defined bone lesions in generally normal bone should serve to confirm the diagnosis of metastases. Multiple myeloma and sarcoidosis may produce both hypercalcemia and bone lesions. Myeloma ordinarily produces sharp, punched out lesions in the skull and one may find Bence-Jones proteinuria and plasmacytosis in the bone marrow smear. Boeck's sarcoid may closely resemble hyperparathyroidism but can usually be recognized by associated lymphadenopathy, hyperproteinemia, suggestive pulmonary lesions, a normal serum phosphorus, and sharply outlined cysts in the phalanges of the fingers. Hypervitaminosis D may cause hypercalcemia. The so-called milk alkali syndrome of Burnett may be associated with hypercalcemia and may be confused with hyperparathyroidism. The Burnett syndrome will be discussed in another portion of this paper. Patients who are immobilized by fractures or paralysis may show most of the blood and urinary findings of hyperparathyroidism. This is thought to be due to a rapidly developing osteoporosis of disuse with rapid mobilization of calcium.

Another good, but not infallible, screening test for hyperparathyroidism is the serum phosphorus level. A serum phosphorus level of less than 3 mg. % should focus attention on the possibility of primary hyperparathyroidism.(35, 138) The level of serum phosphorus has been of inestimable aid to some investigators in the detection of parathyroid hyperfunction while others have not been impressed with its usefulness. Bogdanoff feels that the demonstration of hypophosphatemia is more important than the serum calcium level in making the diagnosis of hyperparathyroidism.(28) It would appear that the concept that serum phosphate levels must be depressed for a diagnosis of hyperparathyroidism is changing since many proved cases of hyperparathyroidism have been associated with normal serum phosphate values. Sixty per cent of Goldman's cases of hyperparathyroidism seen during the past two years had serum phosphate levels in the range of normal.(70) This is in marked contrast to the early experience with this disease when it was thought that hyperparathyroidism was associated with a low serum phosphate level unless renal insufficiency supervened. The mechanism of hypophosphatemia in this disorder may be explained as follows: parathyroid hormone increases the renal excretion of phosphate. At the same time, it mobilizes calcium phosphate from the bones. However, the excessive quantities of phosphate excreted in the urine are so large that notwithstanding the increased calcium phosphate transport to the blood, the serum phosphate decreases.(159) On the other hand, normophosphatemia in cases of surgically proved hyperparathyroidism should be explained. Theories advanced are that increased dietary intake of phosphorus may compensate for the renal phosphate leak and that increased breakdown of osseous and muscle tissue may cause a release of endogenous phosphate stores.(70, 141) In children with hyperparathyroidism, a 1 to 2 mg. % allowance must be made for their normally higher serum phosphorus values.(154)

Hypercalcinuria as determined by quantitative determinations of 24-hour urinary calcium excretions may help to establish the diagnosis. The patient should be maintained on the low calcium diet of Bauer and Aub(15) for several days before doing urine studies. The calcium intake should be restricted to 125 mg. per day for the performance of this study. A normal individual excretes less than 100 mg. of calcium daily under these dietary restrictions. A value over 150 mg. per day is suspicious and a value over 200 mg. per day is highly suggestive of hyperparathyroidism.(15) The nonparathyroid causes of hypercalcinurina must be kept in mind.

The Sulkowitch test provides a rapid qualitative screening method for the presence or absence of excessive urinary calcium excretion. This test should be regarded as a rough index of calcium excretion since false negatives and false positives have been reported.(71)

Determination of the spinal fluid calcium may be of value in cases of hypercalcemia. This test may be used to rule out hyperparathyroidism in the presence of hypercalcemia. In conditions not due to hyperparathyroidism, the spinal fluid calcium is elevated, but in hyperparathyroidism there is no elevation.(133) The normal value is 5 mg. %.

The phosphate deprivation test may be of some use. It is felt by some that the American diet is fairly high in phosphorus content and thus may mask a high serum calcium value. By restriction of phosphate intake to about 500 mg. per day, a falsely normal serum calcium level may rise to hypercalcemic levels in cases of parathyroid hyperfunction.(45)

The calcium tolerance test is one of the more promising methods for the detection of hyperparathyroidism. The intravenous administration of calcium sufficient to produce hypercalcemic levels causes an elevation in serum phosphorus of over 1 mg. % in the normal individual. It also causes a reduction of 20% to 60% in urinary phosphorus excretion. However, these determinations may be unreliable. In patients with parathyroid adenomas the increase in serum phosphorus during the administration of calcium is less than 1 mg. % and the decrease in urinary phosphorus excretion is usually less than 20%. Hypercalcemia apparently results in a depression of parathormone excretion and the patient with hyperparathyroidism has a less marked depression of parathormone secretion than the normal individual(35, 45, 94). The physiologic basis for this test dates back as far as 1924 when it was noted that serum phosphate levels rose after calcium chloride infusions in the dog.(150) In 1950, a decreased urinary phosphate excretion was noted following calcium gluconate infusions in man,(18) and Howard, Hopkins, and Connor, in 1952, introduced the calcium tolerance test for the study of parathyroid abnormalities.(94) The technique of the test is well described by Chambers, et al.(45) This test was positive in 11 of 17 patients with proved hyperparathyroidism reported by Goldman, Gordan, and Chambers in 1957.(70) It is thus readily apparent that false negatives may occur.

The most promising test would appear to be the tubular reabsorption of phosphate.(70) The derivation of the formula is quite complicated and the reader is referred to the Journal of Clinical Endocrinology, November 1956, for further details.(45) The renal tubules normally reabsorb 80 to 90% of the phosphate filtered through the glomeruli; however, this value is considerably reduced in cases of hyperparathyroidism.(70) Chambers, et al., noted an average TRP of 58% in proved cases of hyperparathyroidism(45). It is well to be aware of several shortcomings of this test. It is not applicable in the presence of uremia since the test is dependent on creatinine clearance as an index of glomerular filtration rate.(35) There are several other conditions which may give a positive TRP; they are osteomalacia, sarcoidosis, Debre-de Toni-Fanconi Syndrome (phosphate diabetes) and idiopathic renal phosphate leak. Another consideration is that normal subjects on a low phosphate diet will exhibit elevated TRP levels and the same phenomenon will occur in those with hyperparathyroidism. Apparently, a period of phosphate deprivation causes an obligatory increase of phosphate reabsorption by the tubules Thus, it would be unwise, in a patient in whom hyperparathyroidism is suspect, to do a TRP immediately following a phosphate deprivation test. Measurement of the TRP is fairly simple in spite of the complicated mathematics which enter into the test. It is necessary to make simultaneous determinations of phosphate and creatinine concentrations in the blood and urine. To determine the amount of phosphate reabsorbed by the tubules, it is necessary to measure the quantity of phosphate filtered by the glomeruli and to subtract the amount found in the urine. The quantity of phosphate filtered equals the volume of plasma filtered per mintue, (glomerular filtration rate, determined by measurement of the creatinine clearance), multiplied by the serum phosphate concentration. The measurement of creatinine clearance is ordinarily a complicated project. However, the same time and volume of urine are used for the urinary excretion of phosphate. In this way, the timing and urine volume cancel out so that the final formula requires neither figure. The only figures needed are the serum (S) and urine (U) concentrations of phosphate (P) and creatinine (C) to calculate the TRP by the formula:

$$\text{TRP} = 1 - \frac{\text{UP X SC}}{\text{UC X SP}}$$

It is convenient to use mg% for each

of the symbols.

The urine should be collected from 8:00 P.M. to 8:00 A.M. At 8:00 A.M. one should obtain the serum creatinine and phosphorus and run simultaneous urine creatinine and phosphorus on the sample that has been collected in the preceding. 12-hour period. It would seem that the TRP is a better diagnostic test than the calcium loading test. The TRP was definitely positive in 22 of Goldman's last 23 cases with surgically proved hyperparathyroidism.(70) It was positive in 15 of the last 16 cases of hyperparathyroidism at the Duke University Hospital.(12) The simplicity of the test and its apparent accuracy would suggest that it should be used as a screening test before the more complicated procedures are undertaken. Its worth is not restricted to the preoperative period since it may serve as an excellent indication of surgical correction of hyperparathyroidism. Following successful removal of a parathyroid adenoma the TRP should rise to nearly 100%, probably due to a temporary hypoparathyroidism.(70) (My personal experiences with the TRP test have not been nearly as glowing as the literature would indicate.)

Recently, radioatcive strontium has been used for the diagnosis of hyperparathyroidism. The technique and results will be published in the near future.(68)

IN THREE PARTS – CONTINUED

"AFTER MASTECTOMY"

WE ARE HAPPY to bring to your attention the fact that the Professional Education film for physicians and nurses, "After Mastectomy," made by the Oregon Division of the American Cancer Society and distributed through this office, was awarded first prize in the category of Professional Films for Allied Medical Professions at the American Film Festival held in New York in April, 1959.

(Available – The Arizona Division, American Cancer Society, Phoenix, Ariz.)

Bureau of Labor Statistics (July, 1959): "In 1933 it required four hours and 48 minutes of work to pay for average M.D. office visit. . . . Today it requires only one hour and 42 minutes."

MD DESCRIBES UNION DECISION

Recognition of the right of the individual to select his own physician was a basic factor in the decision by a Chicago labor union to abandon two closed panel clinics earlier this year.

Dr. Charles E. Thompson, medical consultant for Chicago Truck Drivers, Chauffeurs and Helpers Union, Local 705, (Ind.), said trustees of the union's health and welfare fund adopted the "free choice" concept as "the best way to provide medical and surgical services and uphold one of our most important freedoms."

Writing in *The Quarterly Review*, the union's publication, Dr. Thompson said America's concept of government is one in which people are governed by elected representatives while maintaining certain individual freedoms in regulating their own conduct.

The freedom of the individual to select his own physician is one of the real freedoms individuals have, he said.

The union closed the six-year-old clinics after deciding that the closed panel method of providing medical care "is antiquated" *(AMA News.)*

Physicians at Johns Hopkins Medical School have increased dogs' excretion of strontium isotopes from five to twenty fold by injecting them with non-toxic doses of sulfates.

If man responds as do dogs and laboratory animals, the disastrous effects of radioactive strontium in atomic ash may be counteracted with sulfates.

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Supply: Chemipen Tablets of 125 mg. (200,000 u.) and 250 mg. (400,000 u.), bottles of 24 tablets. Chemipen Syrup (cherry-mint flavored, nonalcoholic), 125 mg. per 5 cc., 60 cc. bottles.

*Knudsen, E. T., and Rolinson, G. N.: Lancet *2*:1105 (Dec. 19) 1959.

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Editorial

THE AMERICAN MEDICAL EDUCATION FOUNDATION

Interest among the Doctors of Medicine in the United States in financial aid to our medical schools has shown an ever increasing trend since the American Medical Education Foundation was conceived and founded in 1950. The vast deficits created over the years by soaring costs, coupled with an ever-increasing demand upon available resources had become more critical with each succeeding year. Since 1950 the Foundation has gathered and distributed to the approved medical schools over $7,000,000. This has been made possible only by the activities of county and state medical organizations, the Woman's Auxiliary and the interest of individual physicians. This money has been distributed each year in the form of unrestricted grants.

Private endowments to schools of higher education have been decreasing over the years. Support from the Federal Government, except for one-time building grants, has seemed unwise. Industry has become aware of the needs of the medical schools and is helping to meet the problem through the National Fund for Medical Education. In the final analysis, however, it is the physicion who must give generously to help train the doctors of tomorrow.

Our medical schools are training 29,473 medical students; graduating approximately 7,000 new doctors of medicine each year; instructing 64,000 dental, pharmacy, technical and allied students; providing short courses for medical specialists and practitioners, family doctors, various health officers and hospital staff members; furnishing free medical care to approximately 2½ million people annually; conducting research projects for corporations, hospitals, foundations and government agencies totalling nearly $75,000,000 annually and publishing the most recent medical findings through journals, books, newspapers and magazines.

Have you done your best?

H.W.K.

ARIZONA MEDICINE

Journal of

The ARIZONA MEDICAL ASSOCIATION, Inc.

AND

MEDICAL SOCIETY OF THE

UNITED STATES AND MEXICO

VOL. 17 FEBRUARY, 1960 NO. 2

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
7. Exclusive Publication — Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unusued manuscripts.
8. Illustrfations — Ordinarily publications of 2 or 3 illustrations accompanying an article will be paid for by Arizona Medicine. Any number beyond this will have to be paid for by the author.
9. Reprints — Reprints must be paid for by the author at established standard rates.

(The opinions expressed in the original contributions do not necessarily express the opinion of the Editorial Board.)

REDUCE YOUR RATES!

The letter which is reproduced below should be read by all. It has far reaching implications which vitally affect every physician.

Tucson, Arizona
November 7, 1959

Dr. Dermont Melick
President of Arizona Medical Association
Suite 1021, Central Towers, North
2727 North Central Avenue
Phoenix, Arizona

Dear Dr. Melick:

The Southern Arizona Retired Teachers' Association requests the Arizona Medical Association give serious consideration to reduced medical rates for retired teachers.

You are well aware of the spiralling cost of living in the last decade. Teachers' retirement pay has not increased in the same ratio, thus making a real hardship on those of us needing medical care. Quoting from the July issue of the National Retired Teachers News Bulletin — "The medical profession has, of course, been aware of this burden of inflated medical costs, and we commend the American Medical Association, and particularly the California Medical Association for their recent stand on doctor's fees. They have recommended to all member physicians that they charge their patient over sixty-five lower fees." The California Medical Association has actually established this at sixty per cent of their regular fee schedule as of July 1, 1959.

Your own Dr. Blasingame of the American Medical Association made the suggestion that physicians agree to accept 60% of their normal fee for persons over sixty-five with modest incomes.

We sincerely hope your association will seriously consider the important issue which will so vitally affect the welfare of retired teachers.

Very truly yours,
(Mrs.) Osa Zinn
President of Southern Arizona
Retired Teachers Association

2432 East Mabel
Tucson, Arizona

This letter exemplifies the thinking of many who have been beguiled into believing that doctors' and their fees are virtually the sole cause of the present economic injustices — it is inferred that if doctors did not charge each seperate segment of society as much as they do, then the economy would be sound.

Mrs. Zinn's cry that — "Teachers' retirement pay has not increased in the same ratio (as the spiralling cost of living) thus making a real hardship on those of us needing medical care" — can equally be applied to Physicians, because our fees have also not kept up with the rise of the cost of living index.

Mrs. Zinn is unaware of the fact that doctors' fees have only risen 84% while the cost of the basic essential — food — has gone up 151%. How does she and others except the doctor to be able to bear the burden of economic equalization? It cannot be done.

Mrs. Zinn has not been properly informed that 97% of all doctors have in the past, in the present and will in the future, make satisfactory fee adjustments in accordance with the financial needs of the individual, even to rendering absolutely free medical service.

For us to make across-the-board reduction for teachers or others — would be entirely unjust fees for any segment of society — retired teachers or others — would be entirely unjust because many of these individuals would have total incomes, far above the indigent or low income levels — or even greater than the doctor's.

It is far better that we doctors, who exceed in our altruism, continue our generosity by making our adjusted fees on the individual-need basis.

"THE PUBLISHER SPEAKS"

The unauthorized article, "The Publisher Speaks," in the December issue of ARIZONA MEDICINE, while interesting reading was hardly accurate. It was worthwhile, for it has enticed comment to members of the Editorial Board, and we realize that some members of The Arizona Medical Association do thumb the journal pages.

A full report on the accusations as listed by our former publisher has been submitted to the Board of Directors. The veracity of the statistics included therein has been reviewed and found correct by our Executive Secretary.

It some members would desire to discuss the publisher's allegations, it is suggested that they review the report as submitted.

D.W.N.

In the July 1959 issue of "Arizona Medicine" there was an article on "Mothball Poisoning in Children." It might be of interest to your readers to know that some years ago I had a case of this type of poisoning in which the child was cyanotic and appeared moribund. An intravenous injection of methylene blue resulted in astounding recovery within a few minutes. This type of treatment was not mentioned in the article.

Sincerely yours,
HUGH C. THOMPSON, M.D.

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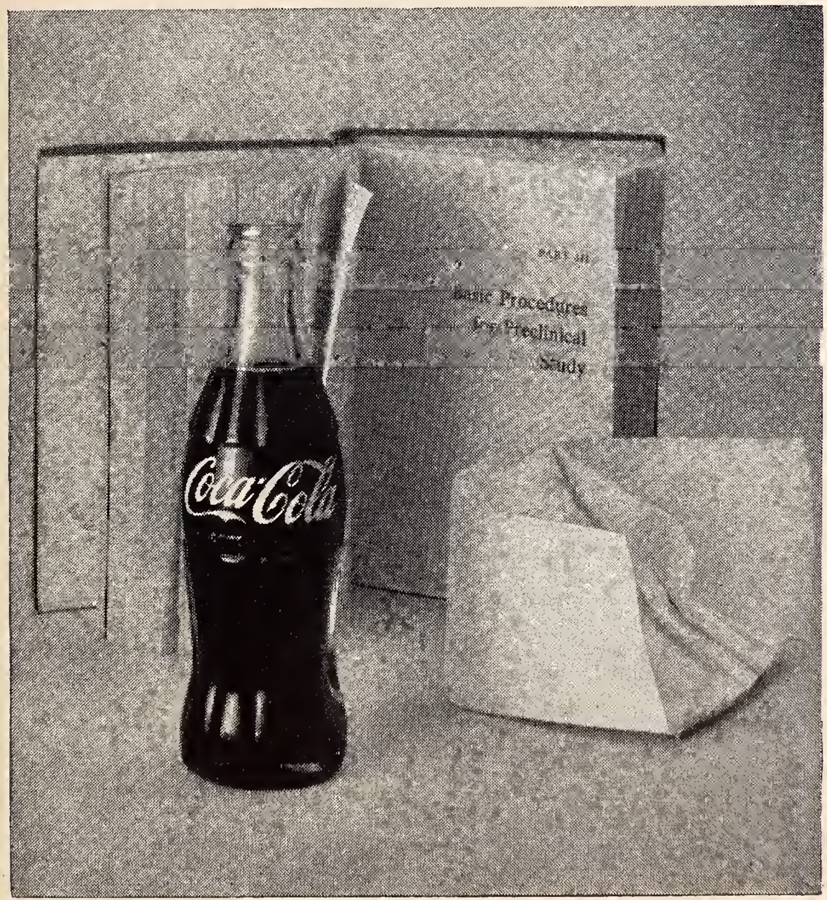


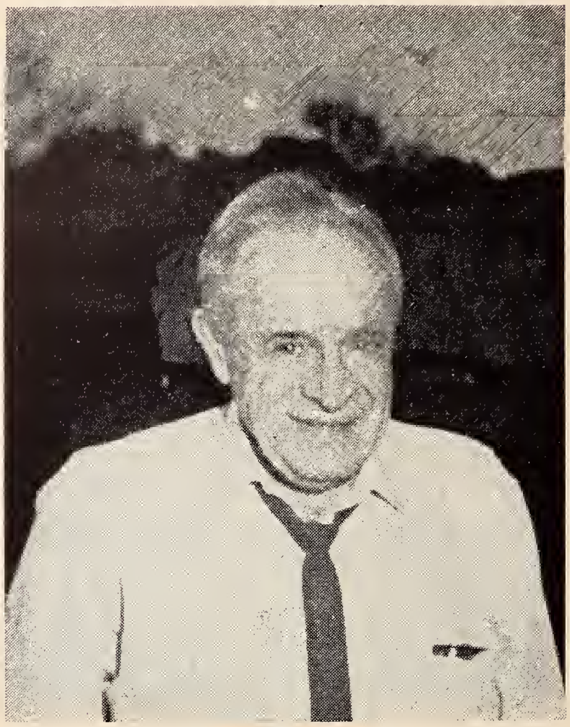
When too many tasks
seem to crowd
the unyielding hours,
a welcome
"pause that refreshes"
with ice-cold Coca-Cola
often puts things
into manageable order.

DRINK
Coca-Cola
REG. U.S. PAT. OFF.

In Memoriam

Elton H. Charvoz, M.D.

1890 - 1959



1890 - 1959

Dr. Elton R. Charvoz died in Phoenix November 29, 1959.

Dr. Charvoz was born in San Francisco. He graduated from the University of California Medical School and settled in Humboldt, Arizona after finishing his medical training in 1916. He moved to Phoenix in 1919 and remained there in practice until his death.

He had belonged to the Arizona Medical Association since 1916, and the Maricopa County Medical Society since 1919, serving the latter organization as its president in 1941.

He was a member of the Trinity Episcopal Cathedral.

He also belonged to the Phi Sigma Kappa and Alpha Kappa Kappa fraternities, the Sahuaro State Kennel Club, and the Executive Club.

He is survived by his wife, Betty; two daughters, Mrs. Simon Kinsman of San Francisco, and Mrs. John R. Howell of Holbrook; a brother, Alan Charvoz of Santa Rosa, California; and five grandchildren.

Arizona Medical Association Reports

BOARD OF DIRECTORS

BOARD OF DIRECTORS

Meeting of the Board of Directors of The Arizona Medical Association, Inc., December, 1959, Leslie B. Smith, M. D.(Vice-President) Chairman, presiding.

CONFERENCE

Arizona Federation of Licensed Practical Nurses

Anticipating a conference of this Board of Directors of The Arizona Medical Association, Inc., with a number of the members of the Board of Directors of the Arizona Federation of Licensed Practical Nurses, Dermont W. Melick, M.D., President, briefly outlined for the Board the current status of the issues at hand between this Association and both the Arizona State Nurses Association Board of Directors and the Arizona Federation of Licensed Practical Nurses, particularly as these issues pertain to national legislation (H.R. 4700 Forand Bill) and desire to discuss local problems of mutual interest.

Doctor Melick reviewed in detail his experiences recently in Yuma at which time he met with the Arizona State Nurses Association during its annual meeting. The American Nurses Association by resolution had expressed favor in support of the Forand Bill. The objective was to seek support of the Arizona nurses in opposition to this type of legislation bringing to their attention the implications therein and Medicine's objections thereto.

Discussion revealed obviously that there is need for improved liaison between the doctor of medicine and the nurses to cultivate better understanding of mutual problems, and to this end, a meeting with a group of nurses appeared indicated. Steps were taken to bring the two Boards of Directors together for such discussion and such meeting was scheduled. The Nurses have found it inconvenient to attend due to another meeting conflicting and apparently are not prepared to meet on this Board level, suggesting a subcommittee of each group meet in preliminary preparation for a future top level conference.

THE FOLLOWING MEMBERS OF THE BOARD OF DIRECTORS OF THE ARIZONA FEDERATION OF LICENSED PRACTICAL NURSES ENTERED THE MEETING:

Edna S. Hoopes (Mesa) President
Esther Welker (Yuma) Vice President
Bessie W. Chapman (Tucson) 2nd Vice President and Tucson Area President
Gladys W. Chapman (Tempe) Secretary
Mary A. Taylor (Tucson) Treasurer
Helen Laken (Kingman) Director
Velma Glimpse (Casa Grande) Director and Florence Area President
Florence Furr (Phoenix) Director
Louise Renner (Bisbee) Director
Bertha Young (Phoenix) Director
Charlotte Webb (Mesa) Director and Mesa Area President
Annie L. Lamb (Prescott) Prescott Area President
Harriet Chapman (Phoenix) Phoenix Area President
Faye C. Nichols (Yuma) Yuma Area President

Note: The Kingman and Bisbee areas were not represented.

The LPNs reviewed for the Board their licensing statutes, training programs, aims and desires in caring for the sick patients in and out of hospitals. Detail and requirements for practicing in Arizona hospitals was also discussed.

A request for assistance from the doctor of medicine in establishing a position consistent with their training and a sincere desire to help the sick patient in the hospital was made to the Board, outlining the current status of nurses' aides and strict limitations imposed by the hospitals and registered nurses, on the L P N s.

THE MEMBERS OF THE BOARD OF DIRECTORS OF THE ARIZONA FEDERATION OF LICENSED PRACTICAL NURSES LEFT THE MEETING.

The current attitude of the RN's; the position of the hospital's point of view regarding the services of the LPN's; the differential of the LPN's licensed by waiver, by examination following prescribed training and the training required by RN's was reviewed by the Board.

The new two year training program for the RN was also reviewed by Doctors Yount and Bean.

It was determined that the Subcommittee on Nurses of the Professional Liaison Committee review the entire matter; meeting with representative groups of the RN's and LPN's as it may determine wisdom, and report to the Board of Directors through the Professional Liaison Committee.

THE MEMBERS OF THE SUBCOMMITTEE ON NURSES OF THE PROFESSIONAL LIAISON COMMITTEE LEFT THE MEETING.

Doctor Richard A. Harvill, President of the University of Arizona (Tucson) by letter dated November 3, 1959, speaking for Mr. Alexander G. Jacome, President of the Board of Regents of the Universities and State College of Arizona, in the matter of gift ($1,000.00) of this Association to said Board of Regents to help defray the expense of a proposed study to determine the needs and potential for the establishment of a medical school in Arizona, which gift has not been to date accepted by the Board of Regents, said Board having since obtained financial assistance and is proceeding to implement the survey, advised that Mr. Jacome "is definitely of the opinion that the Association may very properly expend the sum that had been contemplated to apply toward the medical study in paying some of the cost of publishing the proceedings of the Medical Educatioin Day conducted May 1, 1959, in pamphlet form and in making appropriate distribution. It is the opinion of President Jacome that, in making the expenditure in this way, in reality the Association is making a contribution to the understanding of medical education by the people of this state to as great a degree as if you contributed this sum directly to the survey study. The excellence of the papers and other presentations made on Medical Education Day last May is well known and it is considered vitally important that this information be disseminated to a wider audience. "Mr. Jacome assures me that there will be no objections by the Board of Regents to this last proposal; indeed he is quite certain that it will be well received by the Board (of Regents) and hence you may proceed to handle the matter accordingly. A report will be made to the Board (of Regents) at its next meeting in order to have the record clear."

Counsel advised that while there is every good intention implied in the release of this Association's previous contribution, to complete the record it would be well for Doctor Melick to communicate with Doctor Harvill and ultimately obtain a letter from the Board of Regents following its next meeting indicating its concurrence in the views expressed by President Jacome through Doctor Harvill.

MEMBERSHIP CLASSIFICATION CHANGES

Cochise County Medical Society

It was moved, seconded and unanimously carried that the Board approve Active membership, dues exempt, for Arnott K. Duncan, M.D., effective January 1, 1960, on the basis of having attained the age 70 years, in accordance with the recommendation of the Cochise County Medical Society.

Graham County Medical Society

It was moved, seconded and unanimously carried that this Board approve Associate membership, dues exempt, for Warren James Nelson, M.D., effective January 1, 1960, on the basis of "residency training" in Radiology, in accordance with the recommendation of the Graham County Medical Society.

Maricopa County Medical Society

It was moved, seconded and unanimously carried that this Board approve Active membership, dues exempt, for Harry J. Felch, M.D., effective

January 1, 1960, on the basis of having attained the age 70 years, in accordance with the recommendation of the Maricopa County Medical Society.

It was moved, seconded and unanimously carried that this Board approve Associate membership, dues exempt, for Walter Paul Sherrill, M.D., effective January 1, 1959, (retroactive) on the basis of retirement due to ill health, in accordance with the recommendation of the Maricopa County Medical Society, excepting for the effective date.

It was moved, seconded and unanimously carried that this Board approve Service membership for Adolph Joseph Urban, M.D., through the component Maricopa County Medical Society, on the basis of service in the Phoenix Public Health Service Indian Hospital, one-quarter dues payment, effective November 6, 1959.

Navajo County Medical Society

It was moved, seconded and unanimously carried that this Board approve Associate membership, dues exempt, for Myron G. Wright, M.D., effective January 1, 1960, on the basis of illness, as recommended by the Navajo County Medical Society.

Pima County Medical Society

It was moved, seconded and unanimously carried that this Board approve Active membership, dues exempt, for Edward J. Gotthelf, M.D., effective January 1, 1960, on the basis of having attained the age 70 years, as recommended by the Pima County Medical Society.

Yavapai County Medical Society

It was reported that Victor Paul Johnson, M.D., voted to membership in the Yavapai County Medical Society but not as yet having paid any dues to the Association, has determined to enter a "residency training" (Radiology) program in Colorado with the VA, January 1, 1960.

It was directed that the Executive Secretary investigate Doctor Johnson's current AMA status reporting thereon to the Yavapai County Medical Society and it may be that Society will recommend the payment of half dues for 1959 by Doctor Johnson to the Association.

PROFESSIONAL COMMITTEE

Relative Value Fee Schedule — Further Study

This Board in meeting held October 11, 1959, following recommendation of its Professional Committee in the matter of standard relative value fee schedules for industrial and commercial groups, took the following action:

"That it is medically ethical that the county societies may accept the principles of the relative value fee schedule for industrial and commercial groups, the unit value to be separately negotiated for each group."

The Professional Committee at a meeting held November 8, 1959, gave further consideration to the matter and strongly recommends to the Board that it is its firm conviction this matter should be thoroughly explored and investigated by an existing committee of the Association; that if there is no proper existing committee that one be established; and that the objective of the committee be to report and make recommendations to be considered by the House of Delegates of this Association at its next annual meeting.

Question was raised as to whether or not any of the Arizona State or County Bar Associations had been contacted by the Association or its Committees in this regard.

MR. JACOBSON: The experiences we have had with our recommended minimum fee schedule, it might be rewarding if there is to be a committee to discuss this, to talk to the Bar because they have had enough experiences both here in Arizona and around the country nationally to first of all have some pretty good ideas as to what the pitfalls are and second, some pretty good ideas as to how at least some of them can be avoided. I think it is the feeling pretty much of lawyers in Maricopa County, it got down to a county finally, that the recommended minimum fee schedule, carefully hedged as ours is, has been more of a help than a hindrance; but it is so carefully hedged that it can, I think, give some ideas to the doctors to be helpful too. It does go only to minimum cases and it is very carefully worded in that respect. It might be interesting for the doctors to take a look at it, it's a printed thing.

It was moved, seconded and unanimously carried that the matter be referred to the Fee and Contractual Medicine Committee, it to immediately begin hearings on this matter and make recommendations to the Board of Directors.

American Cancer Society — Statistical Survey

The Professional Committee in meeting held November 8, 1959, recommended to the Board of Directors that a statistical survey, as being effected through the American Cancer Society, be approved.

Such survey is being undertaken on a voluntary basis through the American Cancer Society to be conducted over a period of ten years during which the various families will be reported on a "confidential" basis, which will cover some fifty thousand families in the United States, five thousand of which will be in the state of Arizona. The analysis will be obtained in an effort to track down many environmental factors in cancer, etc. It is reported that the project has the approval of the American Medical Association.

It was moved, seconded and carried, eleven votes in the affirmative and one in the negative, that we accept the report.

It was moved, seconded and unanimously carried that we approve their recommendation in so far as it is not in conflict with any legal restrictions or revelation of confidential communications.

MCH — Prevention of Gonorrheal Ophthalmitis — Agents other than Silver Nitrate

The House of Delegates of this Association in annual meeting held May 2, 1959, adopted a resolution calling for the approval of agents other than silver nitrate for use in the prevention of gonorrheal ophthalmitis. The Arizona State Department of Health was directed to approve a list of additional agents other than silver nitrate for the prevention of the gonorrheal ophthalmia of the newborn, after consultation with recognized medical authorities on the subject.

The American Academy of Pediatrics arrived at the following conclusions:

1. Gonorrheal ophthalmitis still constitutes a definite hazard to the newborn infant.
2. Silver nitrate has amply demonstrated its effectiveness as prophylactic of gonorrheal ophthalmia.
3. The occurrence of non-specific conjunctivitis does not, of itself, constitute adequate reason for change.
4. The routine use of antibiotics may introduce further problems referable to control of infections of the newborn.

The Professional Committee recommends to the Board of Directors that it take no action as directed by resolution of the House of Delegates in question.

It was moved, seconded and unanimously carried that we accept this report.

Subcommittee on Aging

It was reported that on his request, Lowell C. Wormley, M.D., had been relieved of his assignment as Chairman of the Subcommittee on Aging of the Professional Committee and that Otto E. Utzinger, M.D., had accepted an interim appointment to that assignment by the President, subject to this Board's approval.

A telegram received Saturday, December 12, 1959, from Doctor Utzinger, stated that: "Must resign from Subcommittee on Aging. Will explain when I return to Phoenix."

It was moved by Doctor Hileman, seconded by Doctor Tuveson and unanimously carried that Doctor Melick receive this Board's prior approval of his selection for interim appointment to this important assignment.

ARIZONA STATE BOARD OF HEALTH

James D. Barger, M.D. (Phoenix), Orin J. Farness, M.D. (Tucson) and Ralph H. Smith, M.D., Board nominees to be submitted to the Governor for selection to fill a vacancy (2/1/60) on the Arizona State Board of Health, were reported as indicating willingness to accept appointment if selected. J. Lytton-Smith, M.D. (Phoenix), a fourth nominee, indicated his willingness to accept; however, with the stipulation he will not be expected to attend all meetings, especially through the summer months. Ben P. Frissell, M.D., the fifth nominee, requests that his name be removed from further consideration. Currently, he is serving as a member of the Maricopa County Board of Health.

It was moved, seconded and unanimously carried that the names of Doctors Frissell and Lytton-Smith be removed from the list of nominees and that the names of E. Henry Running, M.D., and Hugh C. Thompson, M.D., be added to this list.

It was moved, seconded and unanimously carried that, should Doctor Hugh C. Thompson decline acceptance of this assignment, the President has this Board's approval to make another appointment to the list of nominees.

ARTICLES OF INCORPORATION AND BY-LAWS COMMITTEE

Membership Appointment — Acceptance

It was reported that the appointees to the reactivated Articles of Incorporation and By-Laws Committee have accepted such assignment and they are as follows:

Leslie B. Smith, M.D., Chairman
W. R. Manning, M.D.
Lorel A. Stapley, M.D.

Committee Request for Instructions

DOCTOR SMITH: The committee now being activated, the Chairman would like to be advised as to what the wishes of this Board may be. Is it intended that this phrase regarding membership be stricken or replaced or revised, or whether we just study it, the phrase being: "be in active practice in Arizona".

Considerable discussion was held as pertains to the problems arising in the Association sponsored sickness and accident insurance program for members removing from the State of Arizona.

It was moved, seconded and carried, ten (10) voting in the affirmative and two (2) in the negative, that we maintain this section and that there be no change in the By-Laws relative to membership.

AMA PAMPHLETS DISTRIBUTION

The Pill That Could Change America

Leslie B. Smith, M.D., called attention to a pamphlet received from the AMA entitled: "The Pill That Could Change America," and indicating a desire for extensive distribution to the doctor of medicine in Arizona.

It was moved, seconded and unanimously carried that we obtain a goodly supply of these pamphlets distributing them to union halls and places like that whenever we can get them in.

PR In Action — PTA Distribution

It was determined that all AMA brochures for PTA distribution be submitted to the Subcommittee on Schools, Professional Liaison Committees for review and comment.

California Statute A.B. No. 2873—Amend......

Leslie B. Smith, M.D., referred to the current California Statute A.B. No. 2873 — Amend Section 2144, Business and Professional Code — Emergency Medical Treatment, stating that, "It occurred to me that maybe we could turn this over to our Legislative Committee and our lawyers with the thought that we, in Arizona, could have such legislation here."

It was moved, seconded and unanimously carried that we follow the suggestion of Doctor Smith.

Establishment of (State) Joint Councils To....

DOCTOR HAMER: Mr. Chairman, I think the Council should consider the request received from the (National) Joint Council to Improve the Health Care of the Aged, that the individual States formulate a similar Council in order to have proper liaison with the National Council, and as you perhaps know, this Council is composed of the American Hospital Association, the American Dental Association, the American Medical Association and the American Nursing Home Association. They, of course, are working in close collaboration with those organizations in the country which show an interest in defeating the Forand Bill. The matter is before you to discuss and determine whether we shall stimulate the formation of a similar Joint Council in our own State.

At the tail end of the report which I submitted to Council in October, at which time I was unable to be present, I attached a suggested guide for the formation of State Joint Councils, which you have supported in these various meetings on the "Aging" which I attended, and you have a copy of it.

It was moved, seconded and unanimously carried that the President be authorized to explore the possibility of implementing the Joint Commission (with the Arizona Hospital Association, Arizona Dental Association and the Arizona Nursing Home Association).

LEGISLATIVE COMMITTEE

H.R. 4700 — Forand Bill

The President in the early morning session reviewed his experiences with the Board of Directors of the Arizona State Nurses Association in attendance during its annual meeting in Yuma and outlined some of the problems existing as he saw them; also, their obvious lack of knowledge of the real implications inherent in the passage of a measure such as H.R. 4700 better known as the Forand Bill.

Lee Ackerman of the Lee Ackerman Investment Co., Inc., of Scottsdale, by letter dated November 20, 1959, seeks information as to a documented plan to combat the Forand Bill by voluntary private enterprise. Referred to President to transmit material.

The State Bar of Arizona, by letter dated December 11, 1959, advised that at a meeting of its Board of Governors, by formal action, went on record as opposing H.R. 4700, 86th Congress, and directed that the Arizona delegation in Congress be so advised.

It was moved, seconded and unanimously carried that this Association reaffirm its strong opposition to the enactment of H.R. 4700, 86th Congress.

Uniform Hazardous Substances Act

For some time the matter of need for and/or desirability of enactment of an Arizona statute providing declaration of hazardous ingredients and warning statements on the label and in accompanying literature of chemical products has been discussed. The Committee on Toxicology of the American Medical Association, following much study and preparation, produced a model for uniform laws entitled: "Uniform Hazardous Substances Act." It has been considered on the Federal level but to date there appears no record of adoption, either by the Federal Government or on a State level. Our House of Delegates in 1958 adopted a resolution demanding action on a limited basis specifically dealing with lead content in paint used for toys, nursery furniture or interiors of dwellings. Our Legislative Committee following review recommended introduction in the Arizona Legislature of a model act on toxicity to cover all the toxic substances in line with the AMA proposal.

The Council (now Board of Directors) in April of this year, referred the entire matter to counsel to determine need and preliminary legal review soon realized it was not just a mechanical, legal evaluation but one where Medicine must join to determine medical need also. After lengthy discussion the following action was taken:

It was moved, seconded and unanimously carried that we take no action at this time to further legislation (in this regard) on the state level.

COCONINO COUNTY MEDICAL SOCIETY

Navajo Ordnance Hospital (Bellemont)

Treatment Civil Service Employees — Complaint

The Coconino County Medical Society filed a formal written complaint against the further maintenance of the Navajo Ordnance Depot hospital located off Highway 66 approximately twelve (12) miles West of Flagstaff, especially as pertains to providing hospital and medical care to some four hundred (400) civilian Civil Service employees and their dependents. While some seventeen years ago need for the operation of this hospital facility and provision for the care of civilian employees by military doctors might have been essential, today, with a modern general hospital and adequate medical care available in Flagstaff, there appears no need for the continuation of operation of the N. O. D. hospital.

It was determined to refer this problem to the subcommittee on Governmental Medical Staffs of the Professional Liaison Committee for investigation and report.

STATE DEPARTMENT OF PUBLIC HEALTH

Mental Health Division

In the absence of Doctor Beaton who was to have presented this subject involving fees paid for psychiatric treatment, the matter was withdrawn.

AMA — THE CITATION — LAW DEPARTMENT

Closed Panel Practice

Referring to an article appearing in the AMA publication entitled: "The Citation," produced by its Law Department, dealing with "closed panel practice," Doctor Smith called attention thereto and recommended review by counsel in the light of Arizona statutes.

It was moved, seconded and unanimously carried that counsel review the article in question for correlation with Arizona law and bring back to us the status of the practice of medicine at the present time.

Legal Conference — Chicago

Doctor Smith further reported to the Board that he had received notification from the Law Department of AMA of a meeting to be held in Chicago, May 20 and 21, 1960, primarily for executive secretaries and counsels, expressing the view that if possible both Mr. Jacobson and Mr. Carpenter should arrange to attend.

AMA CLINICAL SESSION — DALLAS

Doctor Hamer, Delegate to AMA, reported briefly on the proceedings of the AMA Clinical Session held in Dallas early in December expressing the view that possibly the most controversial subject was that dealing with the "freedom of choice of physician" wherein the House reaffirmed two statements approved previously in Atlantic City:

1. "The American Medical Association believes that free choice of physician is the right of every individual and one which he should be free to exercise as he chooses."

2. "Each individual should be accorded the privilege to select and change his physician at will or to select his preferred system of medical care, and the American Medical Association vigorously supports the right of the individuals to choose between these alternatives."

However, in order to clarify and strengthen its position on the issue of freedom of choice of physician, the House also adopted this additional statement which was submitted as a substitute amendment on the floor of the House:

3. "Lest there be any misinterpretation, we state unequivocally that the American Medical Association firmly subscribes to freedom of choice of physician and free competition among physicians as being prerequisites to optimal medical care. The benefits of any system which provides medical care must be judged on the degree to which it allows of, or abridges, such freedom of choice and such competition."

A more detailed report will appear in Arizona Medicine.

Doctor Stapley reviewed his initial experiences and impressions on this, his first authorized attendance to the AMA meetings expressing gratitude for the privilege to be there. Summed up, he concluded that every doctor of medicine should attend one or more of these meetings to fully appreciate the serious approach to and manner of handling of Medicine's business and its interests by the House of Delegates of AMA.

COMMUNICATIONS

Southern Arizona Retired Teachers Association Request for Reduced Medical Rates for Retired Teachers

Mrs. Osa Zinn, President of the Southern Arizona Retired Teachers Association (Tucson) by letter dated November 7, 1959, requests this Association to give serious consideration to reduced medical rates for retired teachers in line with recently expressed views of the AMA dealing with fees for senior citizens over sixty-five years of age and alleged action of the California Medical Association implementing such expression by the parent body.

It was pointed out that the Association does not have the power to set fees for individual doctors; that the doctor of medicine has traditionally and always considered the income of the patient on an individual basis and will continue to reduce costs when indicated; that nobody has ever been denied medical attention for lack of money; and if anyone can point out any proven cases of reported teachers in need where medical services have been denied or where fees have been out of line, such cases will be investigated.

It was moved, seconded and unanimously carried that Doctor Melick reply to this inquiry.

Arizona State Prison — Women's Wing

Mrs. Carl G. Hoyer, Chairman of the Committee for the *Improvement* of the *Women's Division of the Arizona State Prison,* Florence, Arizona (P. O. Box 82, Scottsdale, Arizona), by letter dated November 15, 1959, sought the adoption of a resolution by this Association in support of their project.

No action taken.

National Society for Medical Research — Contribution

The National Society for Medical Research (Chicago), by letter dated November 18, 1959, express appreciation for this Association's contribution ($100.00) in support of its work.

Received and filed.

Red Book Magazine — Cigarette Smoking

Walter Goodman, Senior Editor, Red Book Magazine, by letter dated November 11, 1959, requests this Association to advise what it has done or may anticipate doing to bring the results of the major studies in this area to the attention of its members and patients, in the light of statements of various official and scientific groups over the past several years that a causal connection between cigarette smoking and lung cancer appears to have been established.

No action.

American Medical Bureau

The "Medi-Credit" promotion proposal of the American Medical Bureau and investigative report of the Maricopa County Medical Society was reviewed.

No action.

Medical and Chirurgical Facuty — Appreciation

The Medical and Chirurgical Faculty of the State of Maryland, by letter dated December 9, 1959, expresses appreciation of the executive secretary and delegates for the hospitality extended at the AMA meeting in Dallas last week.

Received and filed.

OTHER BUSINESS

Medicare Contract — Supplemental Agreement

Submitted for review and execution authorization was supplemental agreement presented by the Office of Dependents' Medical Care (Contract No. DA-49-007-MD-806) providing for restoration of certain care, effective January 1, 1960.

It was regularly moved and unanimously carried that the President and Secretary be authorized to execute in behalf of the Association, the supplemental agreement submitted.

Treasurer's Report

Doctor Yount presented the Treasurer's Report on the state of finances of the Association to date following relocation of the new Central Offices in the Central Towers Building, Phoenix, previously authorized by the Board of Directors. The following additional monies were allocated or reallocated to the budgeted appropriations for the fiscal year 1959-60:

Postage	$ 300.00
Rent	615.56
Salaries	5,700.00
Supplies	1,100.00

It was moved, seconded and unanimously carried that the Board of Directors approve the allocation or reallocation of an additional $7,700.00 to the 1959-60 Budget of Appropriations necessary to conduct the business of the Association.

Publishing Committee

The Treasurer reviewed current expenditures to date associate with the publication of "Arizona Medicine" Journal.

It was determined by the Board that the Publishing Committee through its chairman, the Editor-in-Chief, prepare on or before March thirty-first, each year, a budget of its anticipated expenditures, together with its anticipated income and submit such report to the Treasurer of the Association for inclusion in preparation of his annual budget report to the House of Delegates.

It was further determined by the Board that future authorization for equipment or expenditures of a major value be recommended to it for its approval prior to such purchases.

LOREL A. STAPLEY, M.D.
Secretary

ARIZONA MEDICAL ASSOCIATION ANNOUNCEMENT ORIGINAL PAPERS — 1960 ANNUAL MEETING

April 1st is the deadline for accepting papers to be judged by the Scientific Assembly Committee to be presented during the 1960 annual meeting in Scottsdale, the award for the most original contribution to be a bronze plaque which will be presented at the president's dinner dance.

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PROFESSIONAL COMMITTEE

BOARD OF DIRECTORS – ACTIONS

The Board of Directors of this Association in meeting held December 13, 1959, took the following actions on recommendations of this Professional Committee:

1. In the matter of standard relative value fee schedules, it directed that this subject be referred to the Fee and Contractural Medicine Subcommittee of the Medical Economics Committee, that body to immediately begin hearings thereon and make recommendations to the Board of Directors.

2. The proposed statistical survey to be undertaken by the American Cancer Society, support of which was recommended by the Professional Committee, was approved insofar as it is not in conflict with any legal restrictions or revelation of confidential communications.

3. Referable to Resolution No. 6, adopted by the House of Delegates of this Association on May 2, 1959, relating to approval of agents other than silver nitrate for use in the prevention of gonorrheal ophthalmitis, and in accordance with recommendation of the Professional Committee, November 8, 1959, the Board of Directors determined that no actioin be taken as stipulated in the resolution aforesaid.

4. Otto E. Utzinger, M.D. (Scottsdale), previously appointed subcommittee chairman on Aging and who had accepted the assignment, resigned. Appointment of a substitute is being considered.

SUBCOMMITTEE REPORTS

Mention was made of the request of Walter Goodman, Senior Editor, Red Book Magazine, that the Association advise what it has done or may anticipate doing to bring the results of the major studies in this area to the attention of its members and patients, in the light of statements of various official and scientific groups over the past several years that a causal connection between cigarette smoking and lung cancer appears to have been established. On advice that the Board of Directors had recently considered this matter and determined it wisdom not to respond, no further action was taken.

Civil Defense and Safety

Doctor Kimball briefly reviewed past activities in the field of Civil Defense and the problems yet to be resolved. That there continues to be considerable lethargy in this acticity on all levels of administration there is little doubt. It is the hope steps will soon be taken to coordinate the various functions to assure preparedness for any eventuality.

Mental Diseases

Doctor Gregory briefed the Committee on the status of the WICHE postgraduate clinical psychiatric education project for physicians. Details will soon be publicized possibly in ARIZONA MEDICINE. A ten-week (2 hours each) series of courses will be activated in the Spring of this year. Doctor Otto L. Bendheim and Doctor William B. McGrath, both of Phoenix, have been selected as the "teachers" and will prepare therefor through attendance at special indoctrination courses scheduled to be held in San Francisco the early part of March, under the auspices of WICHE.

To be selected are the students which will be limited to fifteen (15). Question of choice was raised and guidance of this Committee sought. The courses will be held in Phoenix; accordingly, availability and transportation convenience must be considered, as full and regular attendance throughout the ten-week series of lectures is essential to the success of the program. It was suggested that possibly seven (7) student member doctors of medicine be selected from Maricopa County; three (3) from Pima County; and five (5) from areas outside these two counties. Selection should be by invitation and it was conceded that the objectives could best be met through statewide participation.

It was concluded that Doctor Gregory promulgate an appropriate letter to be prepared and mailed to the Central Office to the Persidents of selected County Medical Societies calling their attention to the importance of this pilot program and urge the careful selection of a member or members, as the case may be, to represent the society as a student(s) who will be able to attend regularly all of the courses throughout the ten-week period.

Venereal Diseases

Doctor Stolfa presented for discussion the subject of pre-marital examinations and value of the blood specimen serological test provided by statute enacted in 1957 (Title 25, Marital and Domestic Relations, Chapter 1, Sections 25-103.01 through 25-103.10 A.R.S.) This item was referred by the Board of Directors to the Professional Committee for review and recommendation.

Considerable discussion ensued. The purpose of this statutory regulation is twofold: (1) one of "delay" (waiting period) in the issuance of a marriage license; and (2) examination, including a standard serological test, as may be necessary for the discovery of syphilis.

To dispose of (1) above, no one is in disagreement with "delay", possibly the waiting period should be extended; however, if this be the major intent of the legislation, there is unanimous agreement that it should not be coupled with a medical problem or examination of questionable value, as prescribed.

Doctor Salsbury reported that the most that can be said for his department's experiences since enactment of the law, as pertains to examination and serological test, is that it has been a means to upgrade the standards of some laboratories in that they have been compelled to meet certain minimums of testing. Question has been raised as to whether both an examination (limited physical) and a serological test are required by the act. Generally accepted opinion so indicates; however, in the instance of a local Superior Court Clerk (Wilson), he has taken it upon himself to interpret the statute as not requiring both and accepts the test as complying therewith. The case finding is considered of little value under such circumstances, and to apply this and not apply the physical examination is felt not right. Border problems at Yuma were reported.

Doctor Stolfa reviewed progress over the years in the treatment of syphilis, relatively simple today; statewide experiences where available; concluding that as best as can be determined from all available statistics, the marital law, since its enactment, has had no noticeable effect upon any decline of syphilis in Arizona. "If the State wants 'delay' in marriages. let's have it, but let's not use this test as the basis. The emotional and moral factors should not be confused from the medical standpoint. The economical load does not justify the test. It is not an aid or alternative in instances of lues for having it done. Steps should be taken at least to repeal that portion of the existing law requiring a serological test. It is not of significant value in control of infectious cases of syphilis. It can and does add moral and emotional upsets in the instance of a false positive reaction."

It was moved by Doctor Stolfa, seconded by Doctor Stapley and unanimously carried that this Professional Committee recommend to the Board of Directors the adoption of the following resolution:

WHEREAS, experience has shown the serological test to be of little value in case-finding of syphilis; and

WHEREAS, morally, we are in favor of a law requiring a "waiting period before the issuance of a marriage license in this state, but not on the basis of a pre-marital blood test; now, therefore, be it

RESOLVED, that steps be taken to repeal that portion of the statute now in effect requiring "examination, including a standard serological test, as may be necessary for the discovery of syphilis", for the reasons: (1) it is a significant added expense; (2) it does rarely reveal infectious syphilis; and (3) it may and does cause serious emotional problems in the instance of a false positive reaction.

REPORT OF THE CHAIRMAN

Aging

Doctor Schwartzmann presented for the information of the members, a communication originating out of the Insurance Committee of the Chamber of Commerce of the United States dealing with activities on "Aging", and its concern over legislative attempt, through amendments to the Social Security law, to effect compulsory health insurance. Full utilization of the Chamber's resources is planned to alert business and professional leaders to its implications and adequately inform them of the issues and potential dangers. They will be encouraged to thoroughly study the plan, participate in meetings, both local and national, leading up to the White House Conference in 1961, and actively support the AMA and other interested groups in aggressively resisting further socialization of this country. It is urged that whenever called upon, each of us willingly assume the assignment in combating the movement of the socializers.

Pediatrics Seminar

Doctor Schwartzmann again presented for further consideration the request of Charles A. Tompkins, M.D., Tucson Pediatrician, for advice as to the ethics of conducting a symposium or forum constituting a workshop type of seminar on preventive and therapeutic pediatrics, phases of the problem with respect to environment, physical illness, resistance to his environment as a natural response to situations, etc. It was indicated Ross Laboratories expressed interest in financing the promotion and printing the proceedings of the seminar open to pediatricians. This would be a continuation of his past undertakings as a teacher and would include local, state, national and possibly international instructors. He sought advice as to the permissibility to present such forums.

The Professional Committee previously took the position and advised the Board of Directors that it sees no reason why it should not be supported by one of the private companies, if needs be, or partially so; further recommending that serious consideration for this type of meeting be given to presentation at the state meeting level so that it will cover all as well as those who would go to it on an annual basis; and offering Doctor Milton Semoff's experience at that time in aiding that as part of the seminar deficit that we have in this Committee. The Board responded that it is not the policy of the Association to sponsor such type of seminar.

It was pointed out that "sponsorship" was not sought. He is trying to find out whether the conduct of such seminar is permissible. The Board action left the impression he should not undertake it. He asks again whether it is ethical and whether he would have permission to go ahead.

It was regularly moved and unanimously carried that Doctor Tompkins be advised that if he wants to do it, it is up to him; that it is not unethical; that the state Association will not sponsor it directly but that there is no reason why he should not do it.

LOREL A. STAPLEY, M.D.
Secretary

LEGISLATIVE COMMITTEE

ARIZONA STATE DEPARTMENT OF HEALTH

Doctor Ben P. Frissell, Chairman, Subcommittee of Public Health of the Professional Liaison Committee of this Association reviewed the membership composite of his subcommittee and reason for its organization following action of the House of Delegates during the past annual meeting. Development of improved liaison between Medicine and the Public Health Department was and is the prime objective in the interest of public health.

Taking a direct interest in matters dealing with the preventive medicine aspects of public health and an analysis of the existing departmental structure on the state level, the need for reorganization became immediately apparent. Clarence G. Salsbury, M.D., present Commissioner, consented to continue to serve until April of 1961 in the hope that a well trained public health administrator can be located to fill the anticipated vacancy.

The first objective, following review of the statutes, is to cause to be enacted an amendment which will provide for a reasonably adequate salary to attract employment of a qualified doctor of medicine trained in public health administration. To succeed in such accomplishment, obviously, the need for an enlightened and well informed Legislature became imperative. A series of conferences to this end already have been conducted under the guidance of our legal advisors.

Doctor Brazie, as chairman of the State Health Department, reviewed the problems of the department over the past several years, inadequate budget and conflict between the Commissioner and the Legislature. Considerable loss in personnel has resulted creating problems of serious proportions.

Mr. Van Dyke presented three (3) bills which the Board of Health feels is essential of enactment this year. They are:

1. Making an appropriation to the State Department of Health, the sum of $25,958.00, to complete the purchase and installation of necessary equipment and cabinet work, move and install equipment owned, and to refurbish quarters in the south side of the ground floor of the Tucson state office building to accommodate the southern Arizona branch of the state laboratory.

2. Amending Section 36-132 B (A.R.S.) [introduced as H. B. 100 1-28-59 – 1st Regular Session] by adding an item:

"20. When advisable, contract with the United States or any department or agency thereof, or with the state or any political subdivision or agency thereof, or with any private organization or agency thereof, for the purpose of providing additional professional or public health services to the state or any part thereof. The state department of health may accept and expend funds for the specified services in accordance with the terms of the contract. Any funds received as provided by the contract shall be maintained separately and shall not become a part of the state general fund."

3. Amending Section 36-105 (A.R.S.) to provide for the more expeditious handling of procedures dealing with abatement of public nuisances.

It was moved by Doctor Hamer, seconded by Doctor Wood and unanimously carried that the proposals of the Board of Health [outlined above] be approved and submitted to the Board of Directors for its consideration.

It was moved by Doctor McDaniel, seconded by Doctor Melick and unanimously carried that we express approval of the excellent work so far accomplished by the subcommittee on Public Health, headed by Doctor Frissell; and further, recommend to the Board of Directors approval of the proposed amendment to Section 36-135 (A.R.S.), providing for the establishment of a more realistic salary for the position of Commissioner of Public Health (a doctor of medicine), and prescribe adequate qualifications for the position.

AMBULANCES – EMERGENCY MEDICAL CARE

Doctor Wood presented for consideration, a list of recommendations dealing with the "transportation of the injured," approved by the Joint Policy Committee of the American College of Surgeons, American Association for the Surgery of Trauma, and the National Safety Council. Basically, it is the desire to require adequate and continuing first-aid and emergency medical care training of all personnel who attend traffic casualties; specifically, ambulance drivers and/or attendants. National survey statistics in this connection, were presented and discussed encompassing some 865 cities throughout the United States. Also presented were the results of a recent meeting with local morticians and others, including Mr. Silvio, operators of public ambulance conveyances. While there was general agreement in the proposals, the operators were reluctant to accept further regulation in the light of established fees for services currently being rendered, fixed by the Arizona Corporation Commission, considered woefully inadequate compared to such fees in effect in other sections of the country. As a matter of fact, most morticians would be agreeable were the city and/or county to take over and operate such services.

Also presented for review were copies of three (3) bills and/or ordinances in effect, adopted by the State of California, Commonwealth of Massachusetts and City of Flint pertinent to the subject. Specifically to point is Section 21714 of the Vehicle Code of the California law enacted in 1959 reading in part as follows:

"No owner of a publicly or privately owned ambulance shall permit the operation of such ambulance in emergency service unless either the operator thereof or an attendant on duty therein possesses an Advanced American Red Cross First Aid Certificate or an Advanced First Aid Certificate issued by the United States Bureau of Mines * * * [followed by procedure for revocation of permit on finding of violation thereof; and providing for the adoption of rules and regulations to implement the act]."

Further, Doctor Wood presented a copy of recommended ordinance or act suggested for the State of Arizona.

It was the consensus that it appears the first step to be taken would be to appeal to the Corporation Commission to consider the establishment of an increased rate for ambulance services and then, step number two, appeal to the Phoenix City Council to adopt an ordinance to regulate transportation of the injured. At a later date, statewide application thereof could follow.

It was moved by Doctor Reed, seconded by Doctor Melick and unanimously carried that this Legislative Committee recommend to the Board of Directors that Doctor Wood present to the (Arizona) Corporation Commission a proposal to the effect that an increase in ambulance services fees on a competitive basis with other states be considered; and that Doctor Wood take this problem to the Maricopa County Medical Society's Legislative Committee for further action.

It was moved by Doctor Truman, seconded by Doctor Melick and unanimously carried that we recommend to the Board of Directors acceptance of the California Act [Section 21714 of the Vehicle Code] referable to operation of ambulances in emergency service, requiring first aid certification of operator or attendant on duty therein; and that following any necessary modification thereof to coordinate it with any existing Arizona statutes, that steps be taken to introduce the measure.

FLUROSCOPIC SHOE FITTING

Martin Snyder, D.S.C., President of the Arizona Chiropody Association, by letter dated January 5, 1960, advised that at its meeting its association reaffirmed its stand with regard to fluroscopic shoe fitting (i.e. to prohibit it), and instructed Doctor Howard Seyfert of Phoenix, that association's legislative chairman, to contact the legislative chairman of this association and cooperate in securing the necessary legislation.

Doctor Shupe stated he would get in touch with Doctor Seyfert and discuss procedure, he being of the opinion their association should take the initiative in introducing any such legislation.

It was moved by Doctor Reed, seconded by Doctor Wood and unanimously carried that the suggestion of the chairman in making contact with Doctor Seyfert be approved; and that this Legislative Committee recommend to the Board of Directors that we also approve the elimination of the use of such fluroscopic shoe fitting equipment in stores.

CANCER ADVISORY COMMITTEE

Doctor Shupe presented for the information of the Committee, a proposed bill to be introduced in the Second Regular Session of the current Twenty-fourth Legislature, by Nelson D. Brayton, M.D., Representative (Gila), relating to public health and safety, providing for the establishment of a Cancer Advisory Committee to the Arizona State Board of Health. Most of the suggested membership are to be doctors; they will develop statistics on cancer in the state and advise the State Board of Health on infractions, treatment and advertising in the field of health. It is patterned after a smiliar California law.

It was moved by Doctor Wood, seconded by Doctor Melick and unanimously carried that this proposed bill, submitted to this Committee, be given more thorough study; that an opinion be obtained from counsel of the Association and, following receipt thereof, copies be made and along with copies of the measure itself, make distribution among the committee membership for further deliberation.

OTHER BUSINESS

Navajo Ordnance Depot

Doctor Kahle presented for the information of the membership the problem confronting the doctors of Coconino County relating to the treatment of civilian Civil Service employees and their dependents by military medical personnel at the Navajo Ordnance Depot hospital. Recognizing this to be a problem of immediate local concern in the instance of available and adequate private hospital facilities and medical services, it was pointed out that the practice could grow and even expand to other military installations. When speaking with congressional representatives, Doctor Kahle urged the membership to point out this practice and suggest that it be investigated. This matter was previously considered by the Board of Directors and referred to its subcommittee on Governmental Medical Staffs of the Professional Liaison Committee for investigation and report.

LOREL A. STAPLEY, M.D.
Secretary
By *ROBERT CARPENTER*
Executive Secretary

WOMAN'S AUXILIARY

INVITATION TO CONVENTION

A special invitation to attend the 30th annual meeting of the Woman's Auxiliary to the Arizona Medical Association is extended to every Arizona physician's wife. We will convene in Scottsdale, May 4 through May 6, 1960, with headquarters at the Safari Hotel.

Mrs. Earl R. Baldwin (Betty), convention chairman, and her committees from Pima County, the hostess auxiliary, are busy with arrangements that will insure us of a relaxed and yet, we hope, an informative meeting.

We are hoping and planning on the largest tournout ever for all of our activities. Won't you please come and be one of those who makes our hopes come true.

Sincerely,
MARY COCHRAN
(Mrs. Hiram D.)
Arizona President

CONVENTION SCHEDULE

Wednesday, May 4

12 Noon to 4:00 P.M. – Registration – Lobby, Safari Hotel.

3:00 P.M. – Pre-convention Board Meeting – President's Suite, Safari Hotel.

Thursday, May 5

9:00 A.M. to 12:00 Noon – Registration – Lobby, Safari Hotel.

9:00 A.M. to 9:30 A.M. – Nominating Committee Meeting.

9:30 A.M. to 12 Noon — Student Nurse Loan Fund Committee Meeting.

12:30 P.M. — Luncheon — Safari Hotel.

Friday, May 6

9:00 A.M. to 12 Noon — Registration — Lobby, Safari Hotel.

12:30 P.M. — Luncheon — Paradise Valley Country Club.

———

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205 E. Camelback Road — AM 5-7510

Samuel Mason, Pod. D.
461 W. Catalina Dr. — AM 6-1009

Howard B. Seyfert, Jr., D.S.C.
753 E. McDowell Rd. — AL 4-4414

Irwin D. Shapiro
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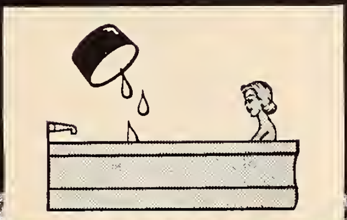

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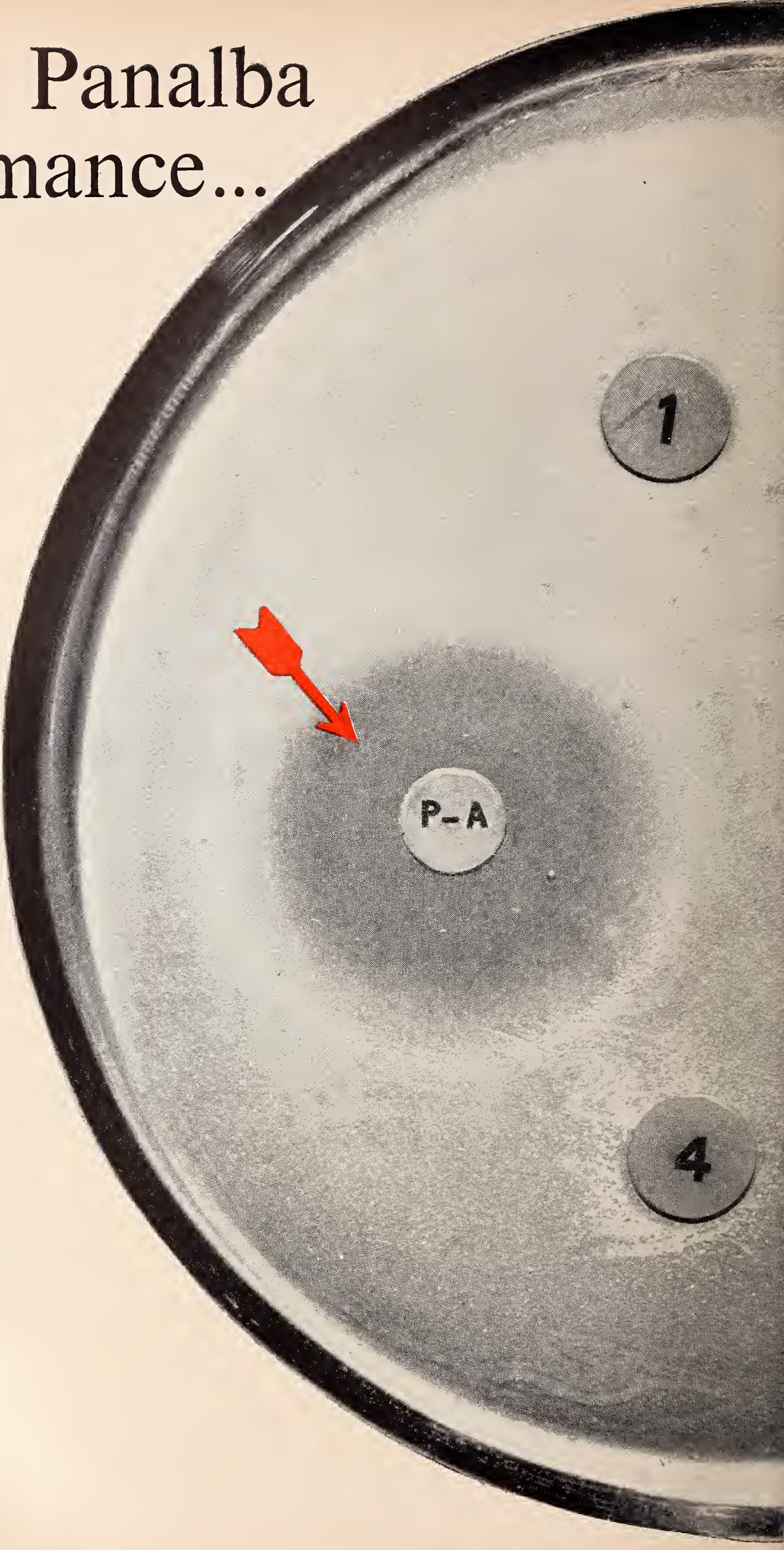

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Topics of Current Medical Intrest

ABSTRACTS FROM THE THIRD REPORT CONCERNING ARIZONA'S PARTICIPATION IN THE W.I.C.H.E. PROGRAM FOR MEDICAL, DENTAL AND VETERINARY EDUCATION

The following abstracts from the third W.I.C.H.E. (Western Interstate Commission for Higher Education) report to the Governor of Arizona and Board of Regents of the Universities and State College of Arizona are reproduced for the interest of our readers. The full report is forty-two pages in length, containing many tables analysing details of this program.

The initial report on the Student Exchange Program (dated August 1, 1957) reviewed the history of the Western Interstate Commission for Higher Education (W.I.C.H.E.) and Arizona's participation in this Commission. The second report (dated August 1, 1958) brought the events reported in the previous report up to that date. Between the two, development of the Arizona Student Exchange Program has been adequately outlined and the operation of the Program thoroughly reviewed.

The present report will confine itself to a review of the year 1958-59 and to bringing the previous reports up to the date of August 1, 1959. Generally speaking, the organization of the present report will follow the plan of the previous ones.

THE ARIZONA PROGRAM

The Commissioners

The composition of the Arizona Commission remains unchanged, and the offices held by the several Commissioners remain unchanged. For the past year, D. W. Melick has continued to serve as Chairman of the Arizona Commission, A. A. Raisin as Vice-Chairman and R. A. Harvill as Secretary. Dr. Harvill remained Arizona's member of the Executive Committee of the Interstate Commission and also served as Vice-Chairman of the Interstate Commission, a post to which he was elected at the annual meeting in Boulder, Colorado on August 11, 1958. H. D. Rhodes continued to serve as Executive Secretary to the Arizona Commissioners.

Summary of Current Student Classification and Status

A total of 101 students have been served for various periods of time under the Student Exchange Program between its inception and the present date. These students (all men so far) were classified as follows during the year.

1958-59 CLASSIFICATION OF ALL STUDENTS SERVED BY THE STUDENT EXCHANGE PROGRAM SINCE ITS INCEPTION

	Fmen	*Soph*	*Junior*	*Senior*	*Gradtd*	*Dropout*	*Total*
Medicine	10	10	7	5	10	3	45
Dentistry	5	3	4	0	3	1	16
Veterinary	8	5	5	7	12*	3**	40
Total	23	18	16	12	25	7	101

*Only 11 had graduated in veterinary when the year started but an additional student graduated at midyear to bring the total to 12.

**One of these dropped out for this year only and returns to the Program for 1959-60.

In the thirteen western states there are nine schools of medicine, six schools of dentistry, and three schools of veterinary medicine. The sixty-nine Arizona Exchange Students included at least one student in each of these eighteen institutions. No other state was represented in all eighteen institutions.

SUMMARY OF APPROPRIATIONS, EXPENDITURES AND STUDENT PARTICIPATION

The table below summarizes the annual appropriations for tuition payments in medicine, dentistry and veterinary medicine from the initial year of the Arizona Student Exchange

Program to date. A rather substantial increase of appropriations for 1959-60 over those for the previous year reflects the judgment of the Commissioners that applications for participation in the Program will continue to be received in increasing numbers, at least in the fields of medicine and dentistry. The appropriations provided for next year are certainly adequate to accommodate the increase and present indications are that they will be more than adequate. Unused appropriations are, of course, returned to the general fund.

TABLE I

TUITION APPROPRIATIONS FROM 1953 TO 1960

Year	*Medical*	*Dental*	*Veterinary*	*Total*
1953-54	37,500	9,600	6,000	53,100
1954-55	24,000	12,800	15,600	52,400
1955-56	40,000	16,000	26,400	82,400
1956-57	46,000	14,400	33,600	94,000
1957-58	70,000	19,200	32,400	121,600
1958-59	70,000	19,200	32,400	121,600
1959-60	100,000	48,000	42,000	190,000

In contrast to the appropriations, the actual expenditures for these years have been as follows:

TABLE II

TUITION EXPENDITURES FROM 1953 TO 1960

Year	*Medical*	*Dental*	*Veterinary*	*Total*
1953-54	4,000.00	3,200.00	6,000.00	13,200.00
1954-55	19,333.33	4,800.00	13,200.00	37,333.33
1955-56	24,000.00	6,400.00	22,800.00	53,200.00
1956-57	41,333.33	11,200.00	28,800.00	81,333.33
1957-58	51,333.33	6,400.00	31,200.00	88,933.33
1958-59	63,000.00	19,200.00	30,000.00	112,200.00
1959-60*	80,000.00	36,800.00	24,000.00	140,800.00
TOTAL	282,999.99	88,000.00	156,000.00	526,999.99

*Based on certification and commitments by professional schools. Actual payment is not made until October or later and the figures may be modified by student withdrawal or late admission.

In terms of students, the amounts shown above have provided for the following:

TABLE III

STUDENTS PROVIDED FOR BY APPROPRIATION FROM 1953 TO 1960

Year	*Medical*	*Dental*	*Veterinary*	*Total*
1953-54	50	8	6	29
1954-55	12	8	13	33
1955-56	20	10	22	52
1956-57	23	9	28	60
1957-58	35	12	27	74
1958-59	35	12	27	74
1959-60	50	30	35	115

Generally speaking, student demand has fallen short of the opportunity provided, except in the case of veterinary medicine. Each year, the legislature has provided more than sufficient funds to accommodate all qualified students who applied for participation with the single exception of Dentistry in 1958-59. Two qualified dental students could not be accounted for this year. This was a result of the belated decision of the University of Southern California to take part in the Student Exchange Program after having not done so the previous five years. Ample funds, however, are available to accommodate these additional students during 1959-60 and subsequent years. Actual participation in terms of students is summarized in the fowolling table:

TABLE IV
STUDENT PARTICIPATION IN THE EXCHANGE PROGRAM FROM 1953 TO 1960

Year	*Medical*	*Dental*	*Veterinary*	*Total*
1953-54	2	2	5	9
1954-55	10	3	11	24
1955-56	12	4	19	35
1956-57	21	7	24	52
1957-58	26	4	26	56
1958-59	32	12	25	69
1959-60*	40	23	20	83

*Based on certifications and commitments by professional schools. Late admissions and student withdrawals may modify these figures.

THE STUDENT EXCHANGE PROGRAM FOR 1959-60

Although the academic year 1959-60 has not yet begun, a reasonably clear picture of the Student Exchange Program can be obtained from the list of certified applicants and the commitments of the several WICHE schools.

Nineteen new medical students will enter the program, all as freshmen. Since five graduated, one left the program to do a year's research prior to continuing his formal medical training, one withdrew from school for financial reasons, three withdrew from the program (but not from school) for personal reasons, and one withdrew following failure, there will be a net increase of eight in the medical program. Student participation in dentistry will almost double (from 12 to 23) with a net increase of 11. This results from the entry of 11 new students (ten freshmen and a sophomore). New students in veterinary medicine dropped materially to two, the smallest number of new veterinary students since the program started. Since seven seniors graduated and one withdrew temporarily to repeat a portion of his freshman year prior to continuing, while another returned to the program after a year's absence to make up deficiencies, 1959-60 will see a decrease of five in veterinary over the previous year. The grand total of 83 students represents a net increase of 14 over the total for last year.

Of the 83 students who will participate in 1959-60, 32 will be new (31 freshmen and a sophomore) while 50 will be carried over from the previous year. One will return to the program after an absence of one year.

The number of graduates at the end of the year will increase to 14 (12 last year).

Summary sheets for 1959-60 follow on the next three pages. It must be kept in mind that accurate participation data will not be available until the year is essentially over. Although there may be little change from the picture presented here, minor changes may be introduced by late acceptance or last minute withdrawals.

TABLE XV
ANNUAL OPERATIONS SUMMARY
ACADEMIC YEAR 1959-60
Seventh Year of Program

		Medicine	*Dentistry*	*Veterinary*	*Total*
Students provided for by legislative appropriation		50	30	35	115
Student participation by class:	Total	20	10	2	32
	Sophomore	6	6	7	19
	Junior	9	3	6	18
	Senior	5	4	5	14
Number of students under the program	Freshman	40	23	20	83
Number of students increase over last year		8	11	–5	14
Number of students who will graduate this year		5	4	5	14

*Tentative summary projected on the basis of certified applicants and commitments of the several professional schools. Although little change may occur, there will probably be some adjustment of this data.

DETAIL OF STUDENT PARTICIPATION FOR THE YEAR 1959-60

Name	*Profession*	*School*	*Year In School*	*Year In Program*
Bailey, Lawrence M.	Medicine	Colorado	3	3
Barnes, Billy W.	Medicine	USC*	1	1
Bateman, Harold J.	Medicine	Utah	2	2
Belsher, Leslie J.	Medicine	Stanford	2	2
Boyle, Robert S.	Medicine	Utah	1	1
Bruner, John A.	Medicine	Stanford	3	3
Citron, B. Philip	Medicine	USC*	1	2
Clement, Michael S.	Medicine	Utah	1	1
Coles, James H.	Medicine	Colorado	1	1
Cracchiola, Andrea	Medicine	Colorado	1	1
Frauenfelder, Dirk	Medicine	USC*	1	1
Geniec, Paul	Medicine	Utah	1	1
Gillespie, William M.	Medicine	Colorado	3	3
Hilding, Ronald F.	Medicine	Utah	1	1
Hughes, Ray D.	Medicine	Colorado	1	1
James, Edwin C.	Medicine	Oregon	2	2
Jarvis, John H.	Medicine	UCLA**	2	2
Jenkins, Charles M.	Medicine	CME***	1	1
Kimball, John T. Jr.	Medicine	Colorado	4	4
Koenig, Kenneth L.	Medicine	Colorado	1	1
LaBelle, James W.	Medicine	Colorado	3	3
Morgan, Joseph T. Jr.	Medicine	Colorado	4	4
Mundall, Stanley L.	Medicine	CME***	3	3
Nichols, Andrew W.	Medicine	Stanford	1	1
Orozco, John N.	Medicine	UCLA**	1	1
Pennington, John W.	Medicine	Colorado	3	3
Pomeroy, Kent L.	Medicine	Utah	2	2
Roberts, Howard L. Jr.	Medicine	Utah	3	3
Ross, Thomas H.	Medicine	Utah	4	4
Ryerson, Sterling J.	Medicine	CME***	3	3
Salvatierra, Oscar Jr.	Medicine	USC*	3	2
Schorr, Wagner J. Jr.	Medicine	Colorado	1	1
Scott, Vernon R.	Medicine	Colorado	1	1
Shill, Otto S. Jr.	Medicine	Utah	1	1
Shill, Talmage W.	Medicine	Utah	4	4
Spitalny, Lawrence A.	Medicine	Colorado	4	4
Sutton, Phon D.	Medicine	Stanford	1	1
Westervelt, Mark J.	Medicine	California	2	2
Witte, Wendell C.	Medicine	Colorado	1	1
Young, George T.	Medicine	USC*	1	1

* University of Southern California.
** University of California at Los Angeles.
*** College of Medical Evangelists.

DETAIL OF STUDENT PARTICIPATION FOR THE YEAR 1959-60

Name	*Profession*	*School*	*Year In School*	*Year In Program*
Bradshaw, John F.	Dentistry	USC*	1	1
Coffman, Harold S.	Dentistry	California	3	2
Darby, Robert L.	Dentistry	CME**	3	3
Eddlemon, Vernon S.	Dentistry	CME**	4	4
Edwards, Marvin	Dentistry	Oregon	4	4

Gagnier, Arthur L. Jr.	Dentistry	P&S***	2	2
Greer, Harvey L.	Dentistry	USC*	2	1
Haacke, Stanley A.	Dentistry	USC*	1	1
Hansen, Doyle L.	Dentistry	P&S***	4	4
Hansen, Gordon S.	Dentistry	USC*	1	1
Heller, Robert M.	Dentistry	Oregon	1	1
Hicks, Paul H.	Dentistry	USC*	1	1
Hicks, Taylor T. Jr.	Dentistry	USC*	2	2
Mullins, Karl D.	Dentistry	Oregon	1	1
Nellis, David L. R.	Dentistry	CME**	1	1
Palmer, Donald K.	Dentistry	CME**	3	2
Peterson, Howard W.	Dentistry	Oregon	1	1
Richardson, Robert K.	Dentistry	California	4	2
Sayre, Ernest J.	Dentistry	California	1	1
Siroky, Charles L.	Dentistry	USC*	2	2
Warren, Emmett J.	Dentistry	Washington	2	2
Wheeler, Larry F.	Dentistry	P&S***	1	1
Wong, James J.	Dentistry	P&S***	2	2

* University of Southern California.
** College of Medical Evangelists.
*** College of Physicians and Surgeons.

DETAIL OF STUDENT PARTICIPATION FOR THE YEAR 1959-60

Name	*Profession*	*School*	*Year In School*	*Year In Program*
Armer, Frank C. Jr.	Veterinary	Colo. State	4	4
Beaubien, K. Gale	Veterinary	Colo. State	4	4
Clark, Maynard R.	Veterinary	Colo. State	3	3
Corley, Sterling C.	Veterinary	Colo. State	1	1
Eads, Alan D.	Veterinary	Colo. State	3	3
Ford, Donald R.	Veterinary	Colo. State	2	2
Gregory, John H.	Veterinary	Colo. State	3	3
Gross, David R.	Veterinary	Colo. State	4	4
Kelly, Thomas E.	Veterinary	WCS*	3	3
Land, Leo L.	Veterinary	Colo. State	2	2
Maul, Lawrence P.	Veterinary	Colo. State	2	2
Miller, George F. Jr.	Veterinary	California	2	2
Newman, Terrance C.	Veterinary	WSC*	2	2
Quist, William J.	Veterinary	Colo. State	1	1
Rezzonico, Richard A.	Veterinary	Colo. State	4	4
Schorr, Richard T.	Veterinary	Colo. State	2	2
Smith, Lot D.	Veterinary	Colo. State	3	3
Sparks, John M.	Veterinary	Colo. State	2	2
Wiggins, Roger N.	Veterinary	Colo. State	3	3
Ziegler, Louis L.	Veterinary	Colo. State	4	4

* Washington State College.

DISCUSSION

The recent (1958) amendments to the law under which the Student Exchange Program operates were discussed in the report of August 1, 1958. The experience of the year 1958-59 has corroborated the opinion expressed previously that these changes have strengthened the program and made it more attractive. Larger and larger numbers of students are availing themselves of the program and indications are that this increased participation will continue.

The educational bargain available to the state is even greater for next year than it was in the year just past. For an expenditure of $140,800, the legislature is providing the finest educational facilities in the West to a total of 83 Arizona students of medicine, dentistry, and veterinary medicine. To provide similar facilities through state supported professional schools in these fields would require many millions of dollars, even at a rock-bottom minimum.

TOXICITY OF ANTIFREEZE

In view of the subfreezing temperature which prevails in various parts of Arizona, it appears timely to acquaint physicians in our state with the toxicological hazards of antifreeze preparations commonly employed in automobile radiators. The so-called "permanent" antifreeze usually contains 90-100% ethylene glycol, a dye, and a rust inhibitor.(1) Ethylene glycol is the major toxic ingredient in this type of preparation. Another type of antifreeze ("non-permanent") usually contains methyl alcohol, a dye, and a rust inhibitor.(1) Methyl alcohol constitutes the major toxic ingredient in the latter type of antifreeze.

The oral lethal dose of ethylene glycol for adults appears to lie between 3 and 4 ounces. (1, 2, 3, 4, 5, 6, 7) Following the ingestion of ethylene glycol, there is an initial transient period of exhilaration followed by the development of ataxia, stupor, and coma, with or without an intermediary stage of convulsions. There may be nausea, vomiting (sometimes hematemesis), and abdominal cramps. The respiration may be noisy and shallow and slow or rapid. The effect of ethylene glycol on the kidneys results in acute renal failure with oliguria or anuria, uremia, hematuria, electrolyte changes, acidosis, peripheral edema, ascites, and pulmonary edema. Death may occur as the result of respiratory paralysis or as the result of renal failure, usually the latter.

Treatment for theylene glycol poisoning is mainly symptomatic. The ingested poison should be promptly evacuated from the stomach by induced emesis or gastric lavage with a 1:5,000 potassium permanganate solution. The respiration should be supported by the administration of oxygen and artificial respiration. The administration of fluid and electrolytes should be limited to replacement of the amount lost in the urine, perspiration, vomiting, etc. Use of the artificial kidney should be considered for the management of renal failure, hyperpotassemia or intractable acidosis. The seriousness of poisoning from the ingestion of "permanent" antifreeze was recently emphasized by Haggerty.(7) This physician reported an incidence in which a group of youths mistakenly consumed some "permanent" antifreeze which was stored in a whiskey bottle. The next morning a 16-year-old boy and a 17-year-old girl were hospitalized and treated for acute renal failure with the artificial kidney. Unfortunately, the girl died in severe, uncontrollable metabolic acidosis after treatment and the boy died later of irreversible renal damage.

The oral lethal dose of methyl alcohol in man lies between 2 and 8 ounces.(8) The well-known symptomology and treatment of methyl alcohol poisoning may be found in various textbooks of pharmacology and toxicology.(3, 8, 9) Poisoning due to this alcohol results from a combination of factors, consisting of (1) a minor component of central nervous system depression, (2) a major component of acidosis due to formic acid, and (3) a specific toxicity of the metabolic products of methyl alcohol (probably formic acid) for the retinal cells. An asymptomatic latent period of 8 to 36 hours may precede the onset of symptoms. Survival and salvage of vision is directly dependent on rapid and complete restoration of acid-base balance. Acidosis should be treated with alkalis, administered in amounts and by routes determined by the severity and progress of the case. Since the oxidation of methyl alcohol is slow, there is a likelihood of recurrence of acidosis after a period of successful treatment. Hence it is recommended that close observation and proper therapy should be continued for several days. As an adjunct, whiskey (or 50% ethanol in water), 1 ounce every 3 or 4 hours, may be given by mouth or stomach tube to retard oxidation of the methyl alcohol. The combined use of alkali and whiskey in the successful treatment of 26 navy men who ingested pure methyl alcohol, varying between 3 and 8 ounces, has been reported by Chew and associates.(11)

CHRONIC CARBON MONOXIDE POISONING

Although the acute form of carbon monoxide poisoning is well recognized, the chronic form of carbon monoxide poisoning has not been fully appreciated. It has been suggested that chronic carbon monoxide intoxication, if such occurs, is the result of repeated acute exposures and that a chronic illness develops from the cumulative effects of repeated tissue injury due to intermittent exposure to the gas.(11) However, Gilbert and Glaser recently cited a case of carbon monoxide poisoning and pointed out the possibility that chronic poisoning by this gas represents a true chronic intoxication rather than one of repeated acute insults.(12)

The case history reported by Gilbert and Glaser(12) involved a policeman, who had spells of dizziness, somnolence, and unconsciousness while directing heavy traffic. In addition the patient had undergone marked personality changes and had become highly nervous and irritable. He also experienced an increase in fatigability, tremor, and sweating. General physical and neurologic examinations revealed no abnormal findings except for mental dullness, general hyperactivity and impaired concentration. The patient was hospitalized and his condition improved. He was discharged with a diagnosis of psychomotor seizures and cerebral atrophy and was placed on antiepileptic medication. A few months later, after he had returned to work, his condition worsened. He had obtained a transfer and worked in the police garage where automobile motors were frequently left running while the radios were adjusted. During the second examination a detailed occupational history was obtained and a blood sample, taken 30 hours after the final exposure to working environment, was examined for carbon monoxide. The specimen was found to be 20% saturated with carbon monoxide. The anticonvulsant medication was discontinued and within a week of hospitaliation, the patient's condition improved; his personality and behavior became normal. After discharge the patient continued to be asymptomatic, except for one weekend when he experienced transient episodes of staggering, confusion, and irritability. These attacks were associated with the operation of a farm tractor, which required the patient to walk behind the machine. The patient stopped working with his tractor and has remained essentially symptom-free.

This case report serves to emphasize the difficulty which may be encountered in the diagnosis of chronic carbon monoxide intoxication. It is suggested that the occupational or environmental history be carefully considered in cases which involve symptoms such as intermittent unconsciousness, anorexia, nausea, weight loss, apathy, fatigability, headache, dizziness, insomnia, and personality changes. Cases of suspected carbon monoxide poisoning may readily be confirmed by a blood test, made shortly after exposure to the offending environment.

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2. Locket, S., Clinical Toxicology, The C. V. Mosby Company, St. Louis, 1957, p. 309.
3. Hulpieu, H. R. and Harger, R. N., The Alcohols, in: Pharmacology in Medicine by Drill, V. A., Ed., McGraw-Hill Book Company, Inc., New York, 1958, p. 195.
4. Kahn, H. S. and Brotchner, R. J. A Recovery from Ethylene Glycol (Antifreeze) Intoxication; a Case of Survival and Two Fatalities from Ethylene Glycol Including Autopsy Findings, Ann. Intern. Med., 32:284, 1950.
5. von Oettingen, W. F., Poisoning, W. B. Saunders Company, Phila delphia, 1958, p. 357.
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11. Goodman, L. S. and Gilman, A., The Pharmacological Basis of Therapeutics, 2nd edition, The Macmillan Company, New York, 1956, p. 929.
12. Gilbert, G. J. and Glaser, G. H., Neurologic Manifestations of Chronic Carbon Monoxide Poisoning, New Eng. J. Med., 261:1217, 1959.

STATISTICS OF 98 POISONING CACES IN ARIZONA DURING DECEMBER, 1959

AGE:	73.5% involved under 5 year age group	(72)
	1.0% involved 6 to 15 year age group	(1)
	9.2% involved 16 to 30 year age group	(9)
	8.2% involved 31 to 45 year age group	(8)
	2.0% involved over 45 year age group	(2)
	6.1% were not reported	(6)
NATURE OF INCIDENT:	87.8% accidental	(86)
	12.2% intentional	(12)
TIME OF DAY:	39.8% occurred between 6 a.m. and noon	(39)
	37.8% occurred between noon and 6 p.m.	(37)
	13.3% occurred between 6 p.m. and midnight	(13)
	1.0% occurred between midnight and 6 a.m.	(1)
	8.2% were not reported	(8)
OUTCOME:	98.0% recovery	(96)
	2.0% fatal	(2)

(1 case aspirin poisoning, 1 case silver nitrate and mercuric iodide poisoning)

CAUSATIVE AGENTS:		*Number*	*Percent*
Internal Medicines			
Aspirin		28	38.8
Other Anaglesics		5	5.1
Barbiturates		6	6.1
Antihistamines		0	0.0
Laxatives		1	1.0
Cough Medicine		2	2.0
Tranquilizers		3	3.1
Others		14	14.3
	Subtotal	69	70.4
External Medicines			
Liniment		0	0.0
Antiseptics		0	0.0
Others		0	0.0
	Subtotal	0	0.0
Household Preparations			
Soaps, Detergents, etc.		0	0.0
Disinfectants		1	1.0
Bleach		2	2.0
Lye, corrosives, drain cleaners		1	1.0
Furniture and floor polish		1	1.0
	Subtotal	5	5.0
Petroleum Distillates			
Kerosene		2	2.0
Gasoline		1	1.0
Others		0	0.0
	Subtotal	3	3.0
Cosmetics		2	2.0
Pesticides			
Insecticides		5	5.1
Rodenticides		0	0.0
Others			
	Subtotal	5	5.1
Paints, Varnishes, Solvents, etc.		1	7.2
Plants		2	2.0
Miscellaneous		1	1.0
Unspecified		4	4.1
	TOTAL	98	100.0

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Dean, College of Pharmacy
The University of Arizona, Tucson
ALBERT L. PICCHIONI, Ph.D.
Pharmacologist and Director
Arizona Poisoning Control Program
The University of Arizona, Tucson
LINCOLN CHIN, Ph.D.
Pharmacologist
The University of Arizona, Tucson

A Budget Plan for Health

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Service for Your Patients
Founded 1936

Your Accounts Aren't Sanforized, Doctor

Unfortunately, Doctor, your accounts receivable are not Sanforized so they shrink in time and cost you money. For the small service charge you pay M&D you can't carry accounts on your books. For instance, an account that's 60 days old is worth only 90 cents on the dollar. After 6 months, its value will have dropped to 71 cents and after one year, 45 cents.

When you add the cost of letters to an unpaid patient (they cost $1.00 each) and statements (costing you 60 cents each) plus the interest you're losing, it just isn't profitable to keep such accounts.

You can't even afford to carry what you might consider a good credit risk for a few months, because even that account is continually shrinking. One important factor to remember is that you should refer a patient to M&D before you perform a service. After a service is performed, it's difficult to collect because there is no security.

You help your patient, too, when you refer him to M&D. You help him meet his financial obligation to you without straining his budget. He pays on easy monthly terms at bank rates. Remember, Doctor, a paid-up patient is a satisfied patient and your greatest practice builder. Don't let valuable accounts shrink away!

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Future Medical Meetings and Postgraduate Education

ARIZONA MEDICAL ASSOCIATION, INC.

SCOTTSDALE **MAY 4, 5, 6, 7, 1960**

69TH ANNUAL MEETING PROGRAM
THE ARIZONA MEDICAL ASSOCIATION, INC.

May 4, 5, 6, and 7, 1960
The Safari Hotel, Scottsdale, Arizona
Following is the program submitted to us February 10th.
Obviously the program is incomplete; alterations and additions will be made.

	WEDNESDAY, May 4th	
8:00 A.M.	Board of Directors Meeting	The Kudu Room
12:00 Noon	Board of Directors Luncheon	The Garden Room
2:00 P.M.	House of Delegates, First Meeting	Convention Hall
4:00 P.M.	Reference Committee Meetings	Conference Room
6:30 P.M.	Reception	Pool Patio
7:30 P.M.	Chuckwagon Dinner	Pool Patio
	THURSDAY, May 5th	
8:00 A.M.	Breakfast Seminar, "Whiplash Injuries." Chairman: John R. Schwartzmann, M.D. Panel: John Eisenbeiss, M.D., Mr. Robert Miller, Edwin R. Schottstaedt, M.D., Louis Jolyon West, M.D., Richard E. McGovern, M.D.	Main Dining Room
9:30 A.M.	Intermission	Visit the Exhibit Tent
10:00 A.M.	Speaker: Harry Schwachman, M.D., Boston Title: Staphylococcal Infections in Childhood.	Convention Hall
10:30 A.M.	OPENING EXERCISES Invocation: Dean George E. Selway Welcome: W. Albert Brewer, M.D., President, Maricopa County Medical Society. Response: To be announced Memorial Service: Dean George E. Selway Presentation of the President: Dermont W. Melick, M.D., Past-President Presidential Address: Lindsay E. Beaton, M.D. Presentation of the Honorable Paul Fannin, Governor of the State of Arizona: Lindsay E. Beaton, M.D.	Convention Hall
11:00 A.M.	Speaker: Kenneth K. Keown, M.D., Columbia, Mo. Title: Regional Anesthesia Combined with Intramuscular Sodium Pentothal for the Pediatric Orthopedic Patient.	Convention Hall Visit the Exhibit Tent Convention Hall
11:30 A.M.	Intermission	
11:45 A.M.	Speaker: Orval R. Withers, M.D., Kansas City, Mo. Title: To be announced	
12:15 A.M.	Speaker: Edwin R. Schottstaedt, M.D., San Francisco Title: To be announced	Convention Hall

12:45 P. M.	Intermission	Visit the Exhibit Tent
1:00 P.M.	SPECIALTY SOCIETY LUNCHEONS – *Open to all registrants.*	
	Arizona Chapter of the American College of Chest Physicians. Speaker: Corrin H. Hodgson, M.D., Rochester, Minn. Title: Hereditary Hemorrhagic Telangietasia and Pulmonary Arteriovenous Fistula. Speaker: Dwight C. McGoon, Rochester, Minn. Title: Recent Developements in Open Heart Surgery.	Convention Hall
	Arizona Pediatric Society Speaker: Harry Shwachman, M.D., Boston Title: The Problem of Malnutrition in Children	Garden Room
	Arizona Chapter, Western Orthopedic Association Speaker: Edwin R. Schottstaedt, M.D., San Francisco Title: To be announced	Kudu Room
2:30 P.M.	Intermission	Visit the Exhibit Tent
3:00 P.M.	Blue Shield Annual Corporation Meeting	Convention Hall
4:30 P. M.	Reference Committee Meetings (on call)	Conference Room
7:30 P. M.	SPECIALTY SOCIETY BANQUETS – *Open to all registrants.* Arizona Academy of General Practice Speaker: Louis Jolyon West, M.D., Oklahoma, City Arizona Society of Anesthesiologists Speaker: Kenneth K. Keown, M.D., Columbia, Mo.	

FRIDAY, May 6th

8:00 A.M.	Breakfast Seminar: Hyposis in Surgery and Obstetrics Chairman: Louis Jolyon West, M.D., Oklahoma City Panel: Max Costin, M.D., Kenneth K. Keown, M.D., William J. Dignam, M.D., Dwight C. McGoon, M.D., Edwin R. Schottstaedt, M.D.	Main Dining Room
9:00 A.M.	Intermission	Visit the Exhibit Tent
9:30 A.M.	Speaker: Col. George H. White, San Francisco Title: Narcotic Addiction from the Point of View of a Law Enforcement Officer	Convention Hall
9:50 A.M.	Response: Otto L. Bendheim, Phoenix Title: Narcotic Addiction, a Medical Problem	Convention Hall
10:10 A.M.	Speaker: Louis J. West, M.D., Oklahoma City Title: To be announced	Convention Hall
10:40 A.M.	Speaker: Carlo Henze, M.D., Hanover, N.J. Title: Recent Progress in Psychopharmacology	Convention Hall
11:10 A.M.	Intermission	Visit the Exhibit Tent
11:25 A.M.	Association's First Prize Award Paper	Convention Hall
11:45 A.M.	Symposium: Psychiatry in General Practice and the Specialities Chairman: Louis J. West, M.D. Panel: James L. Grobe, M.D., Harry Swachman, M.D., Edwin R. Schottstaedt, M.D., Orval R. Withers, M.D., Corrin H. Hodges, M.D., William J. Dignam, M.D.	Convention Hall
12:45 P.M.	Intermission	Visit the Exhibit Tent
1:00 P.M.	SPECIALTY SOCIETY LUNCHEONS – *Open to all Registrants*	

	Joint Meeting: Arizona Chapter, American College of Surgeons & Southwestern Obstetrical and Gynecological Society Speaker: William J. Dignam, San Francisco Title: The Usefulness of Culdoscopy in Gynecologic Diagnosis	Convention Hall
	Arizona Society of Allergy Speaker: Orval R. Withers, Kansas City, Mo. Title: To be announced	Kudu Room
	Arizona Society of Pathologists Speaker: John B. Alsever, M.D., Phoenix Title: The Problem of Transfusion Hepatitis	Garden Room
2:30 P.M.	Intermission	Visit the Exhibit Tent
3:00 P.M.	House of Delegates, Second Meeting	Convention Hall
7:00 P.M.	President's Reception	Pool Patio
8:00 P.M.	Dinner Dance	Convention Hall

SATURDAY, May 8th

9:00 A.M.	Speaker: Kenneth K. Keown, M.D., Columbia, Mo. Title: The Recognition and Treatment of Heart Failure in the Operating Room	Convention Hall
9:30 A.M.	Speaker: Wm. J. Dignam, M.D., San Francisco Title: Indications for Office Gynecologic Procedures of a Surgical Nature	Convention Hall
10:00 A.M.	Speaker: Carlo Henze, M.D. Title: Serotonin and the Carcinoid Syndrome	Convention Hall
10:30 A.M.	Intermission	Visit the Exhibit Tent
10:45 A.M.	Speaker: Corrin H. Hodgson, M.D., Rochester, Minn. Title: The Solitary Circumscribed Pulmonary Nodule	Convention Hall
11:15 A.M.	Speaker: John B. Alsever, M.D., Phoenix Title: Transfusion Therapy in the Emergency Treatment of Secondary Shock	Convention Hall
11:45 A.M.	Speaker: Dwight C. McGoon, M.D., Rochester, Minn. Title: Cardiac Septal Defects	Convention Hall
1:00 P.M.	Annual Handicap Golf Tournament	Scottsdale Country Club
7:00 P.M.	Golfers Banquet — C. Thomas Read, M.D., Golf Committee Chairman, presiding.	Scottsdale Country Club

LIST OF GUEST SPEAKERS AND TITLES

John B. Alsever, M.D., Medical Director, Southwest Blood Banks, Phoenix, Arizona.

William J. Dignam, M.D., Assistant Professor of Obstetrics and Gynecology, University of California, at Los Angeles.

Carlo Henze, M.D., Medical Director, Sandoz Pharmaceuticals, Hanover, New Jersey.

Corrin H. Hodgson, M.D., Asst. Professor of Medicine, Mayo Foundation, University of Minnesota.

Kenneth K. Keown, M.D., Professor of Anesthesiology, University of Missouri Medical School.

Dwight C. McGoon, M.D., Chief, Cardiac Surgical Section, Mayo Clinic, Rochester, Minn.

E. R. Schottstaedt, M.D., Associate Clinical Professor of Orthopedic Surgery, Univ. of California

Harry Schwachman, M.D., Associate Clinical Professor of Pediatrics, The Children's Medical Center, Boston, Massachusetts.

Lewis Jolyon West, Professor of Psychiatry, University Medical Center, Oklahoma City, Oklahoma.

Col. George H. White, Director Supervisor, Bureau of Narcotics, San Francisco, California.

Orval R. Withers, M.D., Associate Clinical Professor of Medicine, University of Kansas Medical School.

THE SOUTHWESTERN SURGICAL CONGRESS TWELFTH ANNUAL MEETING

The Southwestern Surgical Congress is meeting in Las Vegas, March 28, 29, 30 and 31, 1960. The Riviera Hotel will be headquarters.

The scientific program runs throughout the four days of the meeting and embraces five guest speakers presenting papers, as well as the organization. The guest presentations will cover General Surgery, Cancer, Vascular Surgery, Obstetrics-Gynecology and Hand Surgery, and the speakers are:

Dr. William P. Longmire, Jr.
University of California Medical Center
Los Angeles
Dr. Ian G. MacDonald
Los Angeles
Dr. Rutherford S. Gilfillan
San Francisco
Dr. Bernard Hanley
Los Angeles
Dr. Walter C. Graham
Santa Barbara, California

Members of the Southwestern Surgical Congress and members of the Armed Forces are not required to pay registration fees. Non-members are welcome but will be required to pay registration fee at the time of the meeting. Members of the Arizona Medical Association are invited.

For the meeting a fairly concentrated scientific program including the guest speakers is planned as well as excellent off-time entertainment.

AMERICAN COLLEGE OF CHEST PHYSICIANS

The Council on Postgraduate Medical Education of the American College of Chest Physicians will present the 13th Annual Postgraduate Course on Diseases of the Chest at the Sheraton Hotel, Philadelphia, March 14-18, 1960.

The most recent advances in the diagnosis and treatment of heart and lung diseases, medical and surgical aspects, will be presented.

ARIZONA TUBERCULOSIS AND HEALTH ASSOCIATION, INC.

APRIL 23 & 24, 1960 (Saturday and Sunday)

The annual meeting of the Arizona TB & Health Association and the Arizona Trudeau Society, its medical section, is scheduled for April 23 & 24 at the Ramada Inn in Phoenix.

ANNOUNCEMENT 1960 ANNUAL MEETING

American Academy of General Practice Category I credit, 12 hours, 1960 annual meeting, Scottsdale.

Furesz and Scotti reported clinical results in twenty-seven patients treated with intramuscular rifomycin B. Most patients became afebrile within twenty-four to seventy-two hours. No side reactions occurred during therapy. The authors concluded that rifomycin B. shows "good promise" in micrococcus and also other types of infections, particularly those of the bilary tract.

(from Seventh Annual Antibiotic Symposium, Nov. 4-6, 1959, Washington, D.C.)

ANTI-GRAM-NEGATIVE ANTIBIOTIC DESCRIBED

McCabe and Jackson, of the University of Illinois College of Medicine, reported results of studies of colistin, a polypeptide substance produced by a soil organism, *Aerobacillus colistinus*. Its spectrum is said to be predominantly against gram-negative bacteria. In-vitro studies show inhibitation of most strains of pathogenic *Escherichia coli* and many strains of pseudomonas and aerobacter.

Colistin was administered intramuscularly to patients with chronic urinary tract infections, septicemia, endocarditis, and wound infections due to gram-negative bacteria. Observations made three months after treatment of chronic urinary tract infections showed that bacteriologic cure was obtained in more than 50 percent of patients. All patients with pseudomonas wound infections showed good results. Only three of seven patients with gram-negative seyticemia were cured or improved. Some toxic effects were exhibited by thirteen patients. Most common were paresthesias, which were severe in two patients.

(from Seventh Annual Antibiotic Symposium, Nov. 4-6, 1959, Washington, D.C.)

Frightened patients when they want a cure,
Bid any price and any pain endure;
But when the Doctor's remedies appear
The cure's too easy and the price too dear.
Daniel Defoe in "The True-Born Englishman"
(1701)

The first specific aldosterone-blocking agent...

ALDACTONE™

effectively extends the medical control of edema or ascites.
It introduces a new therapeutic principle in the treatment of...

CONGESTIVE HEART FAILURE • HEPATIC CIRRHOSIS
THE NEPHROTIC SYNDROME • IDIOPATHIC EDEMA

ALDACTONE introduces a new class of therapeutic agent, the aldosterone-blocking agent providing:

> *satisfactory relief* of resistant or advanced edema even when all other agents, alone or in combination, are ineffective or are only partially effective.

A New Order of Therapeutic Activity

ALDACTONE acts by blocking the effect of aldosterone, the principal mineralocorticoid governing the reabsorption of sodium and water in the distal segment of the renal tubules.

By so doing Aldactone establishes a fundamentally new and effective approach to the control of edema or ascites, including edema resistant or unresponsive to conventional diuretic agents.

Further, because of its different site and mode of action in the renal tubules, Aldactone has a true, highly valuable synergistic activity when used with a mercurial or thiazide diuretic.

What Physicians May Expect of Aldactone

It is fully expected that Aldactone will change present medical concepts of the therapeutic limitations of managing edema. Many patients living in a greater or lesser state of edematous invalidism can now be edema-free. To others, gravely ill, Aldactone will be life-saving.

When used alone, Aldactone will produce a satisfactory diuresis in about half of those patients whose edema is resistant to conventional diuretic agents.

When Aldactone is used in a comprehensive therapeutic regimen, which includes a mercurial or a thiazide diuretic, a satisfactory diuresis and relief of edema may be expected in approximately 85 per cent of edematous patients *who would not otherwise respond.*

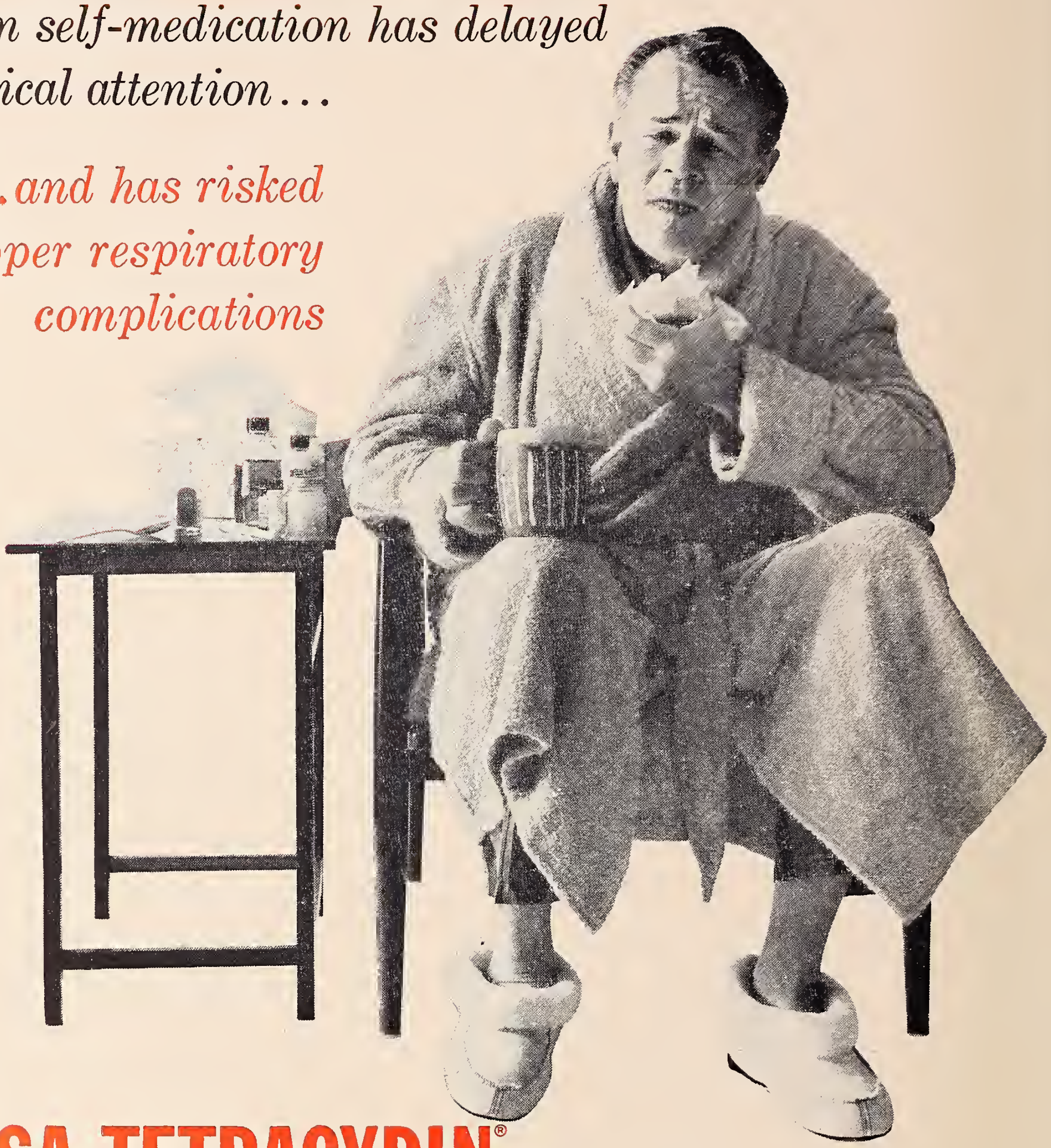
DOSAGE: For most adult patients the optimal dosage of Aldactone, brand of spironolactone, is 100 mg. four times daily. Aldactone should be administered for at least four or five days before appraising the initial response, since the onset of therapeutic effect is gradual when it is used alone. Aldactone manifests accelerated activity with greater response as early as the first and second days when used in combination with a mercurial or thiazide diuretic.

SUPPLIED: Aldactone is supplied as compression-coated yellow tablets of 100 mg.

G. D. SEARLE & CO.
Chicago 80, Illinois
Research in the Service of Medicine

in the **"COMMON COLD"**
when self-medication has delayed medical attention . . .

. . . and has risked upper respiratory complications



COSA-TETRACYDIN® CAPSULES

Cosa-Tetracyn® — analgesic — antihistamine compound

act quickly to

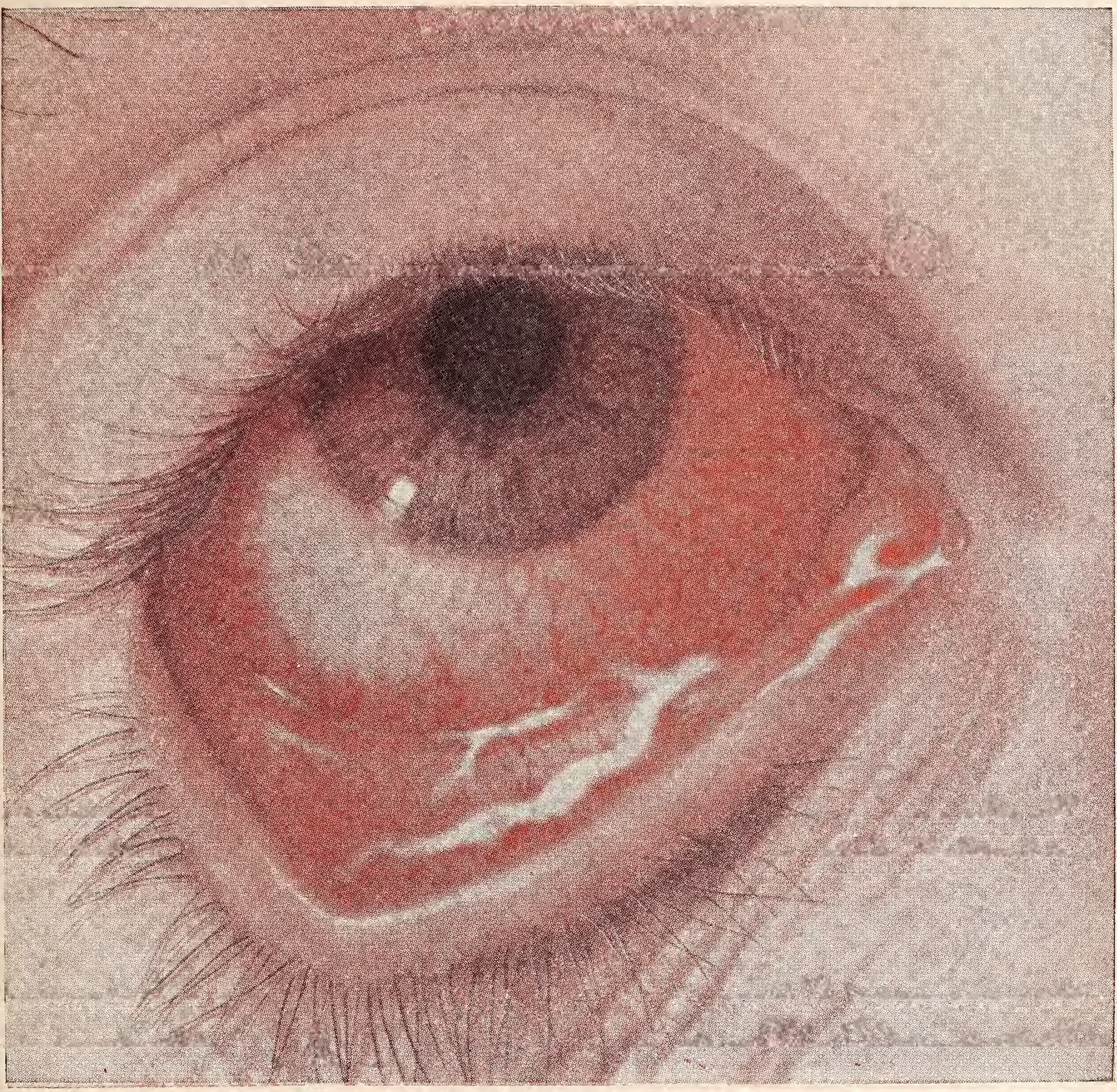
- *control secondary infection*
- *alleviate cold symptoms*

each capsule contains:

Cosa-Tetracyn	125 mg.
phenacetin	120 mg.
caffeine	30 mg.
salicylamide	150 mg.
buclizine HCl	15 mg.

average adult dose: 2 capsules q. i. d.

Pfizer *Science for the world's well-being* PFIZER LABORATORIES, *Division, Chas. Pfizer & Co., Inc., Brooklyn 6, N.Y.*



no irritating crystals[1] · uniform concentration in each drop[2]

STERILE OPHTHALMIC SOLUTION

NEO-HYDELTRASOL®

PREDNISOLONE 21-PHOSPHATE-NEOMYCIN SULFATE

2,000 TIMES MORE SOLUBLE THAN PREDNISOLONE OR HYDROCORTISONE

"The solution of prednisolone has the advantage over the suspension in that no crystalline residue is left in the patient's cul-de-sac or in his lashes . . . . The other advantage is that the patient does not have to shake the drops and is therefore sure of receiving a consistent dosage in each drop."[2]

1. Lippmann, O.: Arch. Ophth. **57**:339, March 1957.
2. Gordon, D.M.: Am. J. Ophth. **46**:740, November 1958.

supplied: 0.5% Sterile Ophthalmic Solution NEO-HYDELTRASOL (with neomycin sulfate) and 0.5% Sterile Ophthalmic Solution HYDELTRASOL®. In 5 cc. and 2.5 cc. dropper vials. Also available as 0.25% Ophthalmic Ointment NEO-HYDELTRASOL (with neomycin sulfate) and 0.25% Ophthalmic Ointment HYDELTRASOL. In 3.5 Gm. tubes.

HYDELTRASOL and NEO-HYDELTRASOL are trademarks of Merck & Co., INC.

MSD MERCK SHARP & DOHME Division of Merck & Co., INC., Philadelphia 1, Pa.

Tofrānil®
brand of imipramine HCl

in depression
lights the road to recovery
in 80 per cent of cases

In the treatment of depression Tofrānil has established the remarkable record of producing remission or improvement in approximately 80 per cent of cases.[1-7]

Tofrānil is well tolerated in usage—is adaptable to either office or hospital practice—is administrable by either oral or intramuscular routes.

Tofrānil
a potent thymoleptic...
not a MAO inhibitor.

Does act effectively in *all* types of depression regardless of severity or chronicity.

Does not inhibit monoamine oxidase in brain or liver; produce CNS stimulation; or potentiate other drugs such as barbiturates and alcohol.

Detailed Literature Available on Request.

Tofrānil® brand of imipramine HCl: tablets of 25 mg., bottles of 100. Ampuls for intramuscular administration only, each containing 25 mg. in 2 cc. of solution, cartons of 10 and 50.

References: 1. Ayd, F. J., Jr.: Bull. School Med., Univ. Maryland *44*:29, 1959. 2. Azima, H., and Vispo, R. H.: A.M.A. Arch. Neurol. & Psychiat. *81*:658, 1959. 3. Lehmann, H. E.; Cahn, C. H., and de Verteuil, R. L.: Canad. Psychiat. A. J. *3*:155, 1958. 4. Mann, A. M. and MacPherson, A. S.: Canad. Psychiat. A. J. *4*:38, 1959. 5. Sloane, R. B.; Habib, A., and Batt, U. E.: Canad. M.A.J. *80*:540, 1959. 6. Straker, M.: Canad. M.A.J. *80*:546, 1959. 7. Strauss, H.: New York J. Med. *59*:2906, 1959.

Geigy, Ardsley, New York

Geigy

TO4-60

Of course, women like “Premarin”®

THERAPY for the menopause syndrome should relieve not only the psychic instability attendant the condition, but the vasomotor instability of estrogen decline as well. Though they would have a hard time explaining it in such medical terms, this is the reason women like “Premarin.”

The patient isn't alone in her devotion to this natural estrogen. Doctors, husbands, and family all like what it does for the patient, the wife, and the homemaker.

When, because of the menopause, the psyche needs nursing—“Premarin” nurses. When hot flushes need suppressing, “Premarin” suppresses. In short, when you want to treat the whole menopause, (and how else is it to be treated?), let your choice be “Premarin,” a complete natural estrogen complex.

“Premarin,” conjugated estrogens (equine), is available as tablets and liquid, and also in combination with meprobamate or methyltestosterone.

Ayerst Laboratories • New York 16, N. Y. • Montreal, Canada

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Incremin®

Lysine-Vitamins Lederle

with iron Syrup

for the undersized underweight child

build appetite

with B complex vitamins

prevent nutritional anemia

with ferric pyrophosphate, a form of iron exceptionally well-tolerated

promote protein uptake

with the potentiating effect of l-Lysine on low-grade protein foods

in taste-tempting cherry flavor

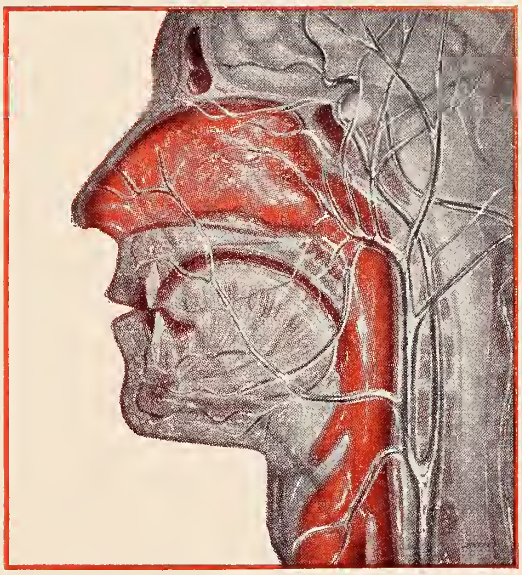
Average dosage, 1 teaspoonful (5 cc.) contains:

l-Lysine HCl	300 mg.
Vitamin B_{12} Crystalline	25 mcgm.
Thiamine HCl (B_1)	10 mg.
Pyridoxine HCl (B_6)	5 mg.
Ferric Pyrophosphate (Soluble)	250 mg.
Iron (as Ferric Pyrophosphate)	30 mg.
Sorbitol	3.5 Gm.
Alcohol	.75%

Bottles of 4 and 16 fl. oz.

Lederle LEDERLE LABORATORIES, a Division of AMERICAN CYANAMID COMPANY, Pearl River, New York

reaches all nasal and paranasal membranes *systemically*[1]



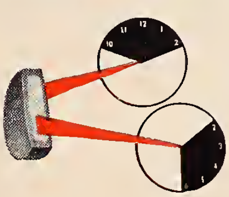
Pharmacologically balanced formula for prompt symptomatic relief

- in nasal and paranasal congestion
- in sinusitis and postnasal drip
- in allergic reactions of the upper respiratory tract

Triaminic[2,3] is safer and more effective than topical medication

- transported systemically to *all* respiratory membranes
- provides longer-lasting relief
- presents no problem of rebound congestion
- avoids "nose drop addiction"

Relief is prompt and prolonged because of this special timed-release action:



first — the outer layer dissolves within minutes to produce 3 to 4 hours of relief

then — the core disintegrates to give 3 to 4 *more* hours of relief

Each Triaminic timed-release Tablet provides:

Phenylpropanolamine HCl	50 mg.
Pheniramine maleate	25 mg.
Pyrilamine maleate	25 mg.

Dosage: 1 tablet in the morning, midafternoon and at bedtime. In postnasal drip, 1 tablet at bedtime is usually sufficient.

Each timed-release Triaminic Juvelet® provides: ½ the formulation of the Triaminic Tablet.

Dosage: 1 Juvelet in the morning, midafternoon and at bedtime.

Each tsp. (5 ml.) of Triaminic Syrup provides: ¼ the formulation of the Triaminic Tablet.

Dosage (to be administered every 3 or 4 hours): *Adults* — 1 or 2 tsp.; *Children 6 to 12* — 1 tsp.; *Children 1 to 6* — ½ tsp.; *Children under 1* — ¼ tsp.

1. Fabricant, N. D.: E.E.N.T. Monthly *37*:460 (July) 1958.
2. Lhotka, F. M.: Illinois M. J.: *112*:259 (Dec.) 1957.
3. Farmer, D. F.: Clin. Med. *5*:1183 (Sept.) 1958.

the leading oral nasal decongestant...

Triaminic®

timed-release tablets and juvelets
also non-alcoholic, fruit-flavored syrup

SMITH-DORSEY • a division of The Wander Company • Lincoln, Nebraska

Living up to a family tradition

There are probably certain medications which are special favorites of yours, medications in which you have a particular confidence.

Physicians, through ever increasing recommendation, have long demonstrated their confidence in the uniformity, potency and purity of Bayer Aspirin, the world's first aspirin.

And like Bayer Aspirin, Bayer Aspirin for Children is quality controlled. No other maker submits aspirin to such thorough quality controls as does Bayer. This assures uniform excellence in both forms of Bayer Aspirin.

You can depend on Bayer Aspirin for Children for it has been conscientiously formulated to be the best tasting aspirin ever made and to live up to the Bayer family tradition of providing the finest aspirin the world has ever known.

Bayer Aspirin for Children—1¼ grain flavored tablets—Supplied in bottles of 50.

● We welcome your requests for samples on Bayer Aspirin and Flavored Bayer Aspirin for Children.

New GRIP-TIGHT CAP for Children's Greater Protection

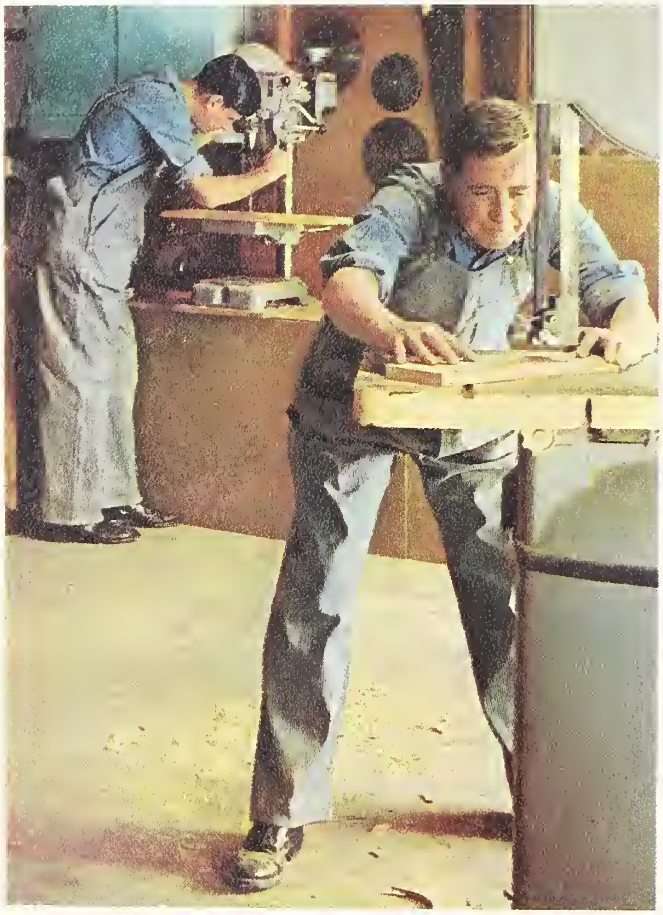
THE BAYER COMPANY, DIVISION OF STERLING DRUG INC., 1450 BROADWAY, NEW YORK 18, N. Y.

IN LOW BACK PAIN...
more and more
reports show that
Trancopal®
true "tranquilaxant"
keeps the patient
on the job

THE FIRST TRUE "TRANQUILAXANT"

Trancopal®

relieves painful muscle spasm and relaxes the patient



Impressive numbers of patients with low back pain and other musculospastic conditions treated with Trancopal have been freed of symptoms and enabled to return to their usual activities, according to newly published clinical reports. In a recent study by Lichtman,[1] Trancopal brough excellent to satisfactory muscle relaxation to 817 of 879 patients. The patients in this group suffered from skeletal muscle spasm associated with low back pain (361 cases), stiff neck (128 cases), bursitis (177 cases), and other skeletal muscle disorders (213 cases). Side effects were rare (2 per cent of patients), and it was not necessary to discontinue medication in any of the patients. Lichtman comments: "Chlormethazanone [Trancopal] not only relieved painful muscle spasm, but allowed the patients to resume their normal activities with no interference in performanc of either manual or intellectual tasks."[2]

When you prescribe Trancopal for musculoskeletal disorders, you can confidently expect that your patients will be relieved of the pain and stiffness. You can be sure of their speedy return to everyday work and recreation.

Mullin and Epifano call Trancopal "...a very effective skeletal muscle spasmolytic."[3] They found that Trancopal brought good to excellent relief to all of 39 patients with keletal muscle spasm related to trauma, bursitis, rheumatoid arthritis, osteoarthritis, and ntervertebral disc syndrome. (No side effects were noted except that one patient had slight ryness of the mouth.)

The pattern is similar in every new series reported: Ganz,[4] DeNyse,[5] Shanaphy[6] and Stough.[7]

Trancopal is a true "tranquilaxant"

Trancopal "...combines the properties of tranquilization and skeletal muscle relaxation with no concomitant change in normal consciousness."[6]

Relieves dysmenorrhea

Trancopal not only is valuable in treating patients with low back pain and other musculoskeletal disorders, but is also very effective in bringing relief from menstrual cramps and discomfort. Shanaphy suggests that Trancopal may help the patient by its combination of muscle relaxant and tranquilizing actions, and he finds that "...the continued use of chlormezanone [Trancopal] as a therapeutic agent in dysmenorrhea is advisable."[6] Trancopal was effective in 82 per cent of his series of 50 patients. In another study, which dealt with 52 adolescent girls and 23 women, Stough[7] reported that Trancopal gave complete or moderate relief in 86.4 per cent.

Alleviates tension

And, of course, Trancopal is also very useful in the treatment of patients in anxiety nd tension states. As Ganz says, "...a most valuable drug for relieving tension, pprehension and various psychogenic states...allows the patient to use his energies in more productive manner in overcoming his basic problems."[4]

Trancopal

a true "tranquilaxant"

that relieves skeletal muscle spasm
and relaxes psychogenic tension
without troublesome side effects,
and keeps the patient on the job.

Indicated for . . .

Musculoskeletal disorders

- Low back pain (lumbago)
- Neck pain (torticollis)
- Bursitis
- Rheumatoid arthritis
- Osteoarthritis
- Disc syndrome
- Fibrositis
- Ankle sprain, tennis elbow
- Myositis
- Postoperative muscle spasm

Psychogenic disorders

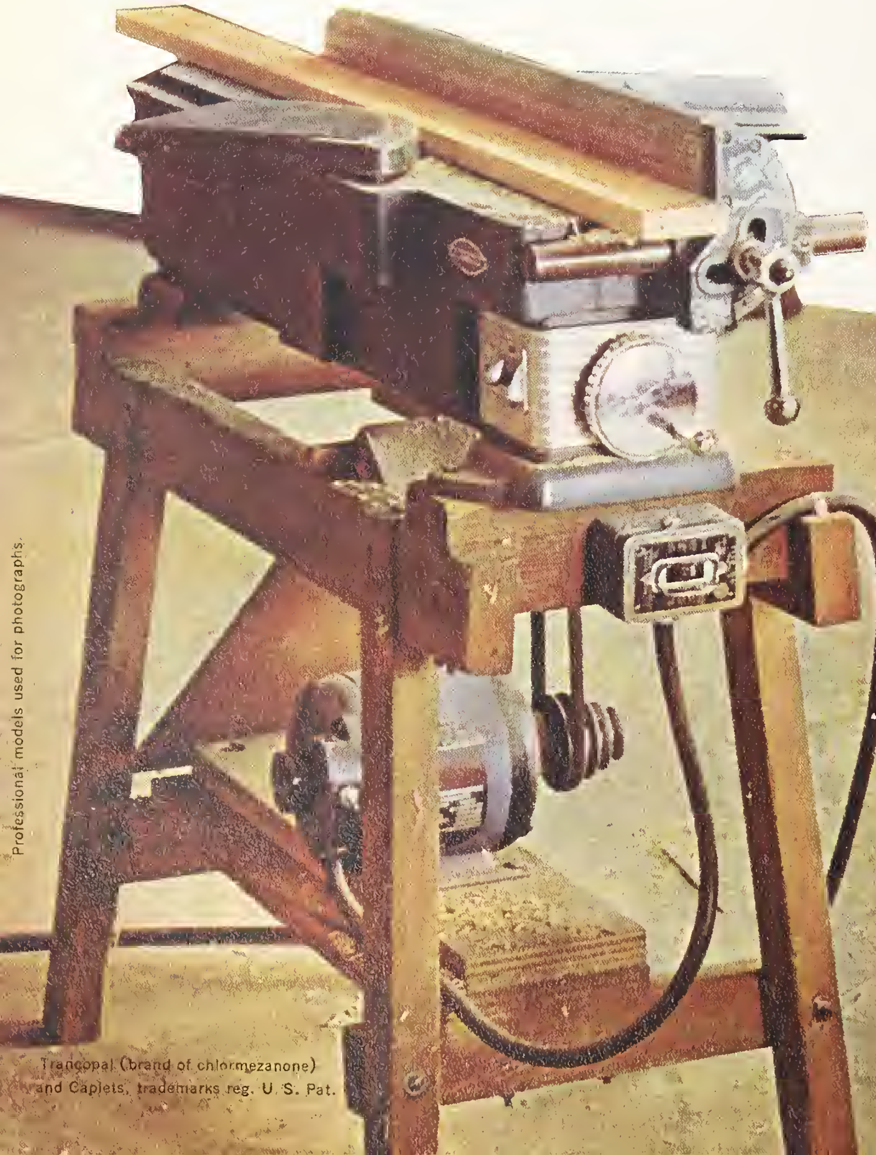
- Anxiety and tension states
- Dysmenorrhea
- Premenstrual tension
- Asthma
- Angina pectoris
- Alcoholism

Now available in two strengths:

Trancopal Caplets®, 100 mg.
(peach colored, scored), bottles of 100.

NEW STRENGTH ▶ Trancopal Caplets, 200 mg.
(green colored, scored), bottles of 100.

Dosage: Adults, 100 or 200 mg. orally three or four times daily. Relief of symptoms occurs in from fifteen to thirty minutes and lasts from four to six hours.



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Winthrop LABORATORIES
New York 18, New York

Professional models used for photographs.

Trancopal (brand of chlormezanone)
and Caplets, trademarks reg. U. S. Pat.

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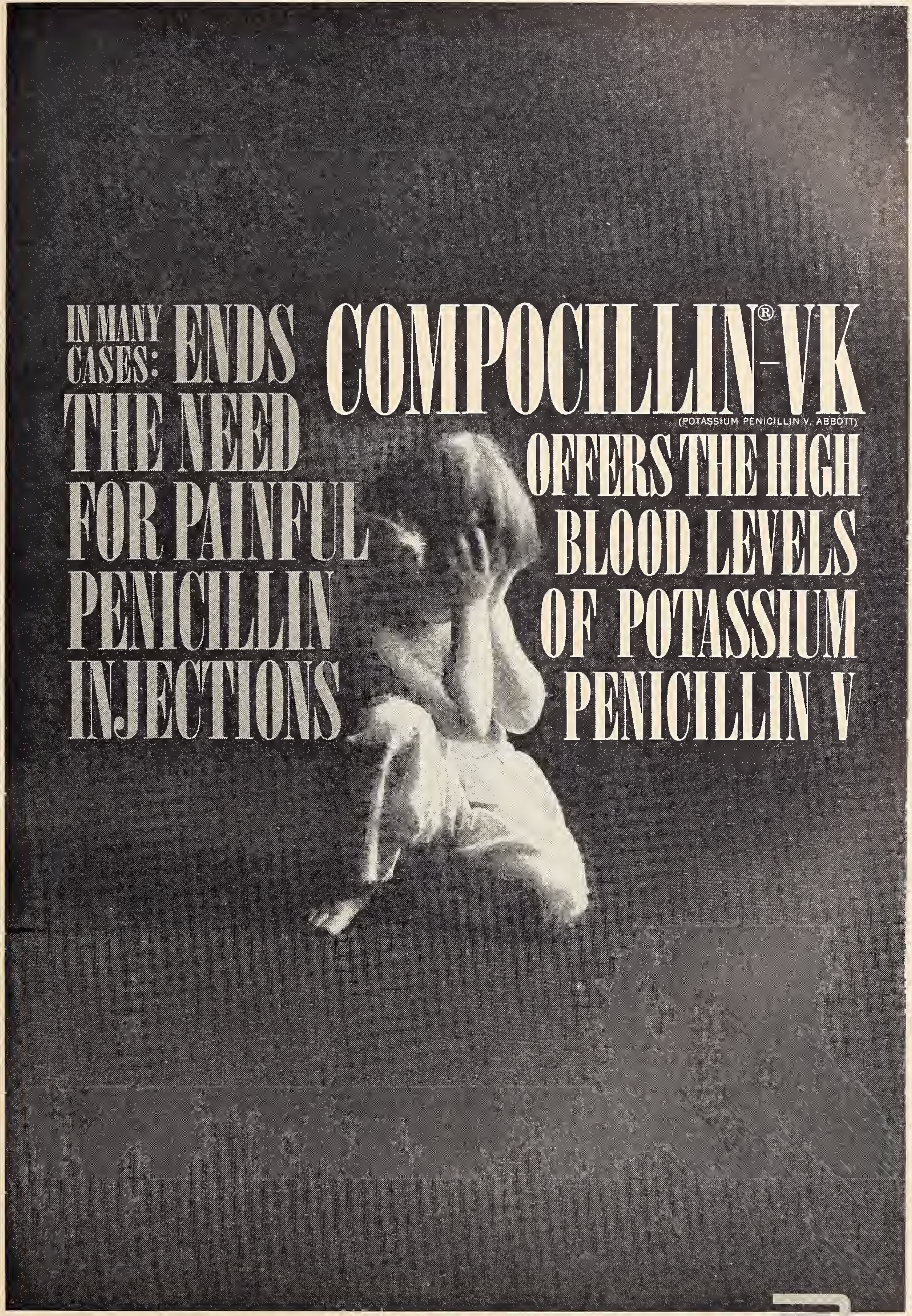

IN MANY CASES: ENDS THE NEED FOR PAINFUL PENICILLIN INJECTIONS
COMPOCILLIN®-VK
(POTASSIUM PENICILLIN V, ABBOTT)
OFFERS THE HIGH BLOOD LEVELS OF POTASSIUM PENICILLIN V

Available in tiny, easy-to-swallow Filmtabs® and in tasty, cherry-flavored Oral Solution. ABBOTT

001187 ®FILMTAB—FILM-SEALED TABLETS, ABBOTT.

Q.

When you want to prescribe a regimen to reduce serum cholesterol and beta lipoproteins, are drastic diet changes necessary?

a.

Fortunately, no. Often only two steps are necessary:

(1) control of the amount of calories and of dietary fat, and

(2) a simple modification of food preparation method in which poly-unsaturated vegetable oil is used in place of saturated fats.

Obviously, in any special diet, the fewer required changes in the patient's eating habits, the more likelihood there is that the patient will adhere to the prescribed diet.

Once total fat and calorie intake is adjusted, the simple replacement of *saturated* fats, used at the table and in cooking, with *poly*-unsaturated Wesson makes possible a most subtle dietary change, yet conforms completely to therapeutic requirements.

Where a vegetable (salad) oil is medically recommended as part of a cholesterol depressant regimen, Wesson is unsurpassed by any readily available brand.

Uniformity you can depend on. Wesson has a poly-unsaturated content better than 50%. Only the lightest cottonseed oils of highest iodine number are selected for Wesson and no significant variations in standards are permitted in the 22 exacting specifications required before bottling.

This flaky pie crust, *crisp cookies, Chiffon cakes, biscuits can all be made easily with Wesson. Decrease the calories of pie by preparing with single crust and a fresh fruit or gelatin filling. It is delicious.*

FREE *Wesson recipes are available in quantity for your patients, showing them how to prepare these treats as well as main dishes, vegetables and salads with poly-unsaturated vegetable oil. Request quantity needed from The Wesson People, Dept. N., 210 Baronne St., New Orleans 12, La.*

Wesson satisfies the most exacting appetites. To be effective, a diet must be *eaten* by the patient. The majority of housewives prefer Wesson particularly by the criteria of odor, flavor (blandness) and lightness .of color. (Substantiated by sales leadership for 59 years and reconfirmed by recent tests against the next leading brand with brand identification removed, among a national probability sample.)

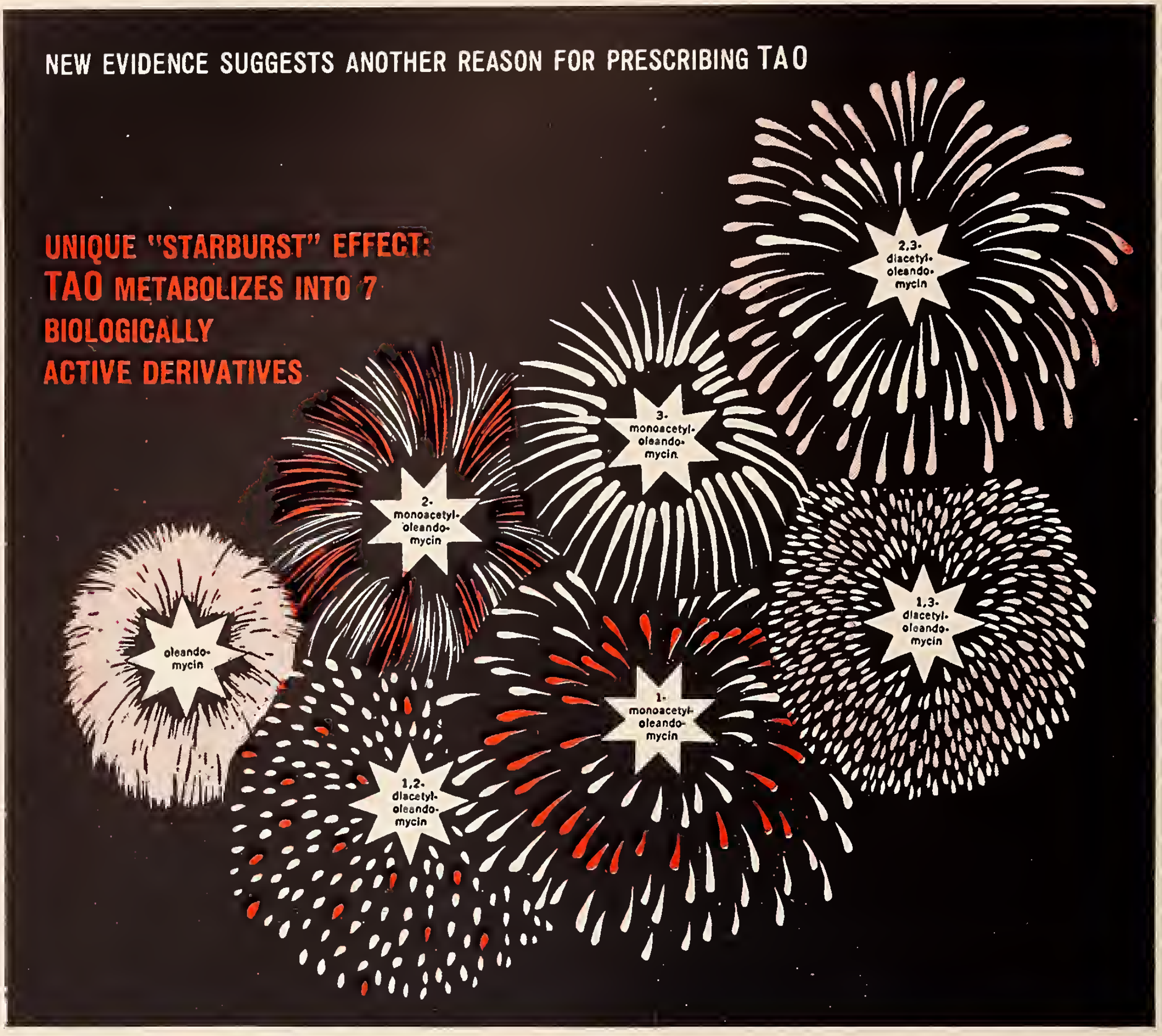
Wesson's Important Constituents

Wesson is 100% cottonseed oil . . .
winterized and of selected quality

Linoleic acid glycerides (poly-unsaturated)	50-55%
Oleic acid glycerides (mono-unsaturated)	19-28%
Total unsaturated	75-80%
Palmitic and stearic glycerides (saturated)	20-25%
Phytosterol (predominantly beta sitosterol)	0.4-0.7%
Total tocopherols	0.09-0.12%

Never hydrogenated—completely salt free

Each pint of Wesson contains 437-524 Int. Units of Vitamin E.


NEW EVIDENCE SUGGESTS ANOTHER REASON FOR PRESCRIBING TAO
UNIQUE "STARBURST" EFFECT: TAO METABOLIZES INTO 7 BIOLOGICALLY ACTIVE DERIVATIVES
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3-monoacetyl-oleando-mycin
2-monoacetyl-oleando-mycin
1,3-diacetyl-oleando-mycin
oleando-mycin
1-monoacetyl-oleando-mycin
1,2-diacetyl-oleando-mycin

The impression that TAO is an unusually active antibiotic has steadily gained recognition by impressive clinical performance. Now come reports of in vivo and in vitro biological and biochemical evaluations that show TAO to be indeed unique.[1,2]

TAO differs from other antibiotics in that it is metabolized to multiple active compounds which remain active throughout their presence in the body. These 7 derivatives (in addition to TAO) show activity against common Gram-positive pathogens, including resistant strains of Staph. aureus.

In light of these findings, take another look at TAO performance: • 92% success in published cases of Gram-positive respiratory, skin, soft tissue and genitourinary infection • Effective against 78% of 64 "antibiotic-resistant" epidemic staphylococci. (In the same study, chloramphenicol was active against 52%; erythromycin against only 25%)[3] • No side effects in 94%; infrequent reactions mild and easily reversed • Quickly absorbed • Highly palatable.

Sound reasons to: Start with TAO to end 9 out of 10 common Gram-positive infections.

Supplied: TAO Capsules—250 mg., and 125 mg., bottles of 60. TAO for Oral Suspension—125 mg. per tsp. (5 cc.) when reconstituted; unusually palatable cherry flavor; 60 cc. bottle. Prescription only.

Other TAO forms available: TAO Pediatric Drops: flavorful, easy to administer. TAO®-AC: TAO analgesic, antihistaminic compound. TAOMID®: TAO with triple sulfas. Intramuscular or Intravenous: in clinical emergencies. Prescription only.

1. English, A. R., and McBride, T. J.: Proc. Soc. Exper. Biol. & Med. 100:880 (Apr.) 1959. 2. Celmer, W. D.: Antibiotics Annual 1958-1959, New York, Medical Encyclopedia, Inc., 1959, p. 277. 3. English, A. R., and Fink, F. C.: Antibiotics & Chemother. 8:420 (Aug.) 1958.

designed
for
superior
control
of
common
Gram-
positive
infections

Tao®
(triacetyloleandomycin)
Capsules/Oral Suspension

ROERIG Rx

New York 17, N. Y.
Division, Chas. Pfizer & Co., Inc.
Science for the World's Well-Being

whenever there is inflammation, swelling, pain

VARIDASE®
STREPTOKINASE-STREPTODORNASE LEDERLE
BUCCAL *Tablets*

conditions for a fast comeback... as in acute hemorrhoids...

SUNDAY, 9 A.M.: VARIDASE for painful thrombotic hemorrhoid. 2:30 P.M.: pain greatly reduced, less swelling and inflammation.

MONDAY: size down to small tab; acute inflammation disappeared.*

VARIDASE activates natural fibrinolytic factors, to limit undesirable inflammatory response and speed healing.

Dramatic reduction of pain is often the first sign of improvement; swelling and redness rapidly diminish. Drugs and natural regenerative factors readily penetrate the inflammatory barrier to effect total remission faster . . . in trauma or infection.

VARIDASE Buccal Tablets contain:
10,000 Units Streptokinase, 2,500 Units Streptodornase.
Supplied: Boxes of 24 and 100 tablets

*Peterman, R. A.: Clinical report cited with permission.

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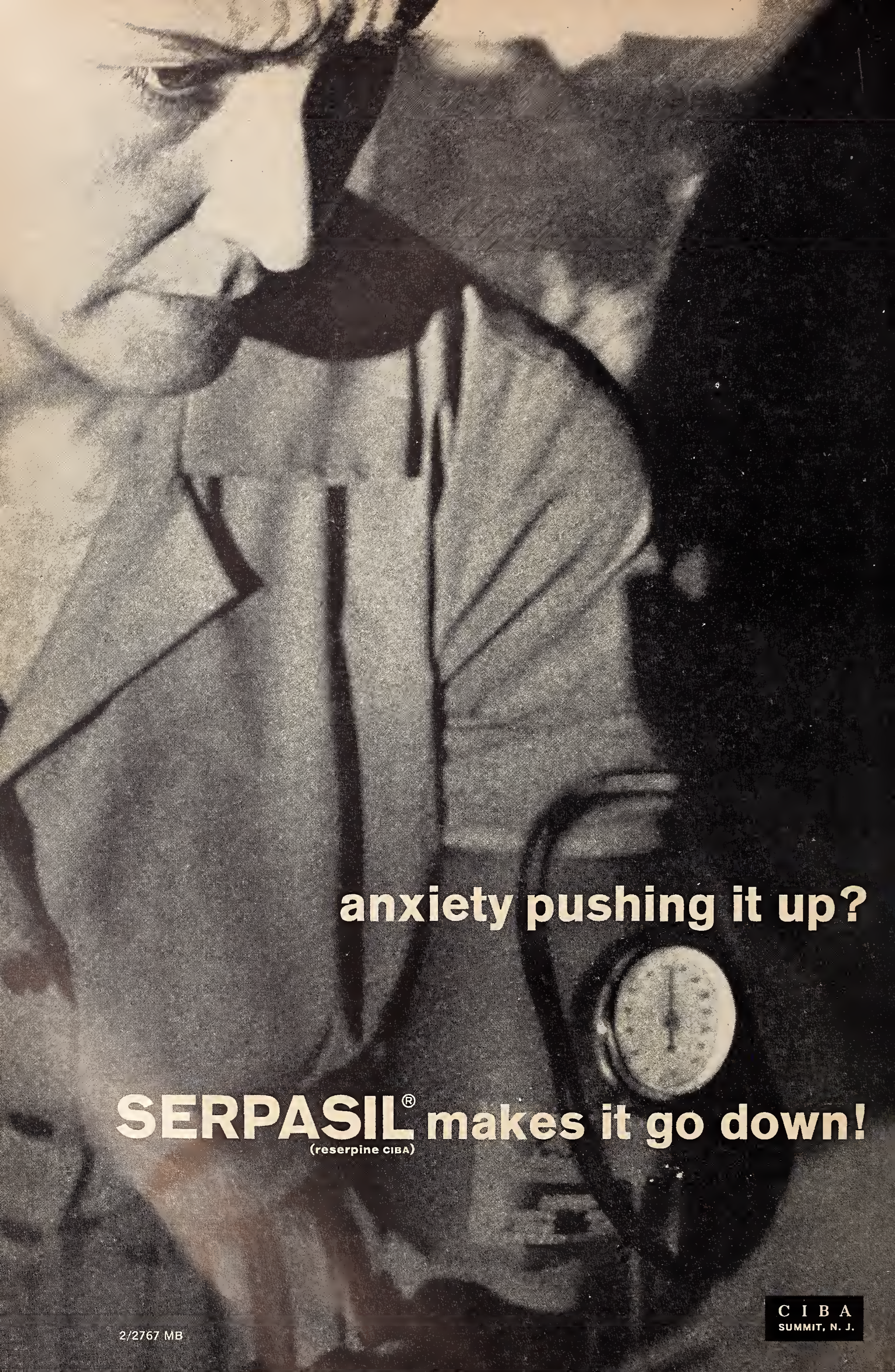
LEDERLE LABORATORIES,
a Division of American Cyanamid Company, Pearl River, N. Y.


anxiety pushing it up?
SERPASIL® makes it go down!
(reserpine CIBA)
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BAD DIGESTION INCLINES ONE TO SKEPTICISM, INCREDULITY, BREEDS BLACK FANCIES AND THOUGHTS OF DEATH JOSEPH CONRAD

When bad digestion is the consequence of digestive enzyme deficiency, Entozyme may dispel dreary symptoms such as pyrosis, flatulence, belching, and nausea, for it is a natural supplement to digestive enzymes. It provides components with digestive enzyme activity: **Pepsin,** N. F., 250 mg., **Pancreatin,** N. F., 300 mg., and **Bile Salts,** 150 mg. Because Entozyme is actually a tablet-within-a-tablet, these components are freed in the physiological areas where they occur naturally. Entozyme has proved useful in relieving many symptoms associated with cholecystitis, post-cholecystectomy syndrome, sub-total gastrectomy, pancreatitis, infectious hepatitis, and a variety of metabolic diseases.

A. H. ROBINS CO., INC. • RICHMOND 20, VA.

ENTOZYME®

Each of the babies pictured on this page was borne by a mother with a *documented* previous history of true habitual abortion, who was treated with DELALUTIN during the pregnancy leading to this birth

LIVING PROOF OF FETAL SALVAGE WITH DELALUTIN

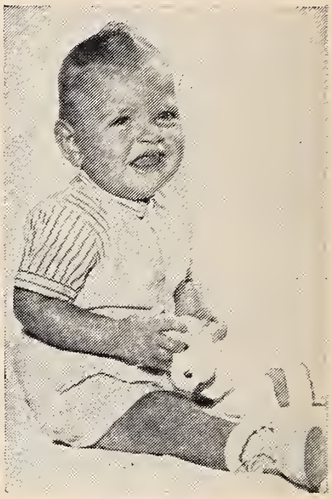
SQUIBB HYDROXYPROGESTERONE CAPROATE

Improved Progestational Therapy

Garden City, N. Y.

Skokie, Ill.

Denver, Colo.


No. Massapequa, L. I., N. Y.

Lincolnwood, Ill.

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East Williston, N. Y.

Norwich, Vt.

DELALUTIN offers these advantages over other progestational agents

• long-acting sustained therapy • more effective in producing and maintaining a completely matured secretory endometrium • no androgenic effect • more concentrated solution requiring injection of less vehicle • unusually well-tolerated, even in large doses • fewer injections required • low viscosity makes administration easy

Complete information on administration and dosage is supplied in the package insert

Supply: Vials of 2 and 10 cc., each containing 125 mg. of hydroxyprogesterone caproate in benzyl benzoate and sesame oil.

SQUIBB *Squibb Quality — The Priceless Ingredient*

'DELALUTIN'® IS A SQUIBB TRADEMARK

for
the
tense
and
nervous
patient

relief comes fast and comfortably

–does not produce autonomic side reactions
–does not impair mental efficiency, motor control, or normal behavior.

Usual Dosage: One or two 400 mg. tablets t.i.d.

Supplied: 400 mg. scored tablets, 200 mg. sugar-coated tablets or as MEPROTABS*–400 mg. *unmarked,* coated tablets.

Miltown®
meprobamate (Wallace)

WALLACE LABORATORIES / *New Brunswick, N. J.*

*TRADE-MARK

CM-1118

New...conservative treatment for muscle and joint disease

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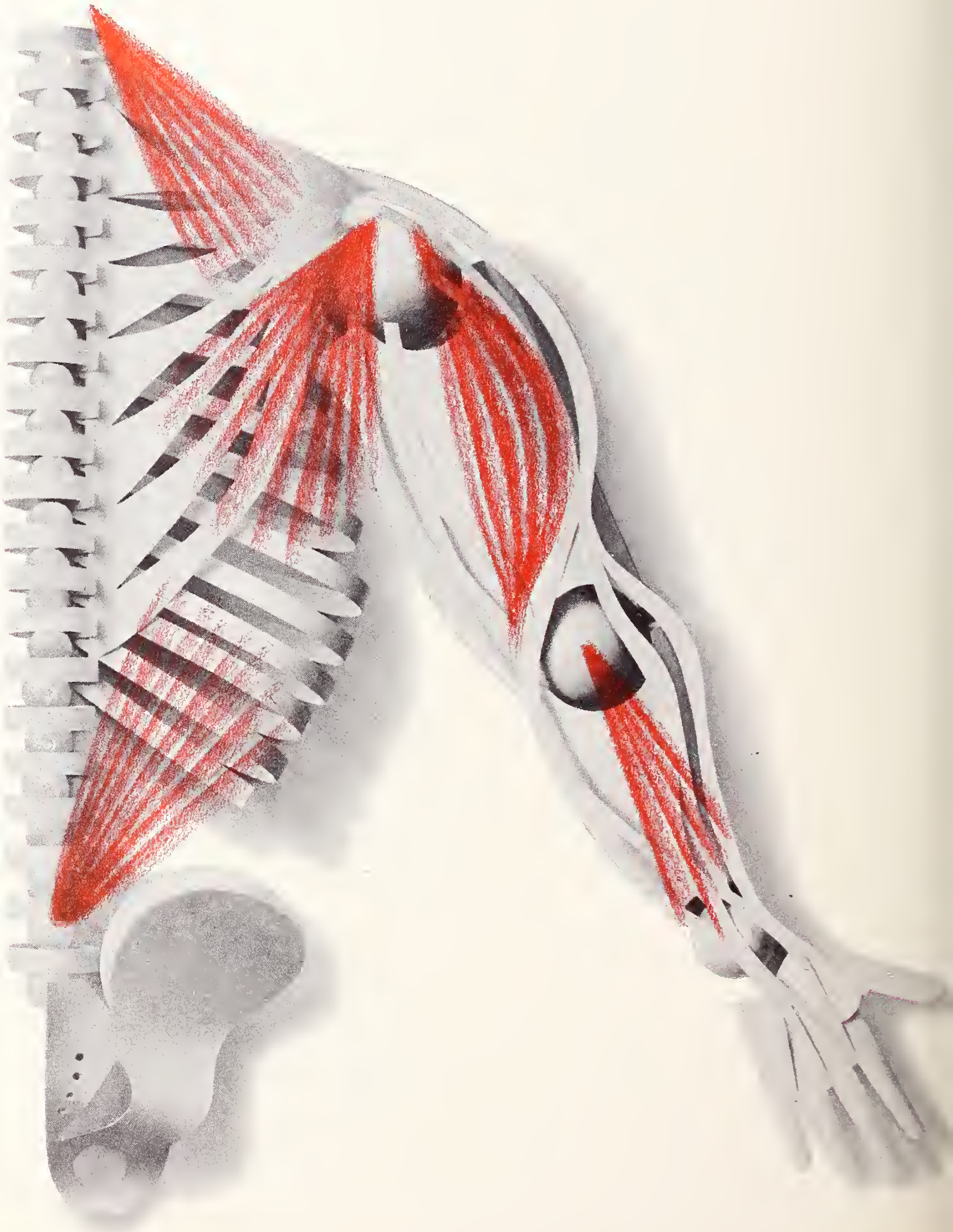

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Kuge, T.: Submitted for publication.

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Wein, A. B.: The Use of Carisoprodol in Orthopedic Surgery and Rehabilitation. Proceedings of the Symposium on The Pharmacology and Clinical Usefulness of Carisoprodol. Wayne State University Press, Detroit, 1959, p. 156.

In a double-blind study, SOMA was reported to be "clinically effective to a highly significant degree." (92 patients.)
Cooper, C. D., and Epstein, J. H.: The Clinical Evaluation of Carisoprodol by a double-blind technique. Ibid. p. 97.

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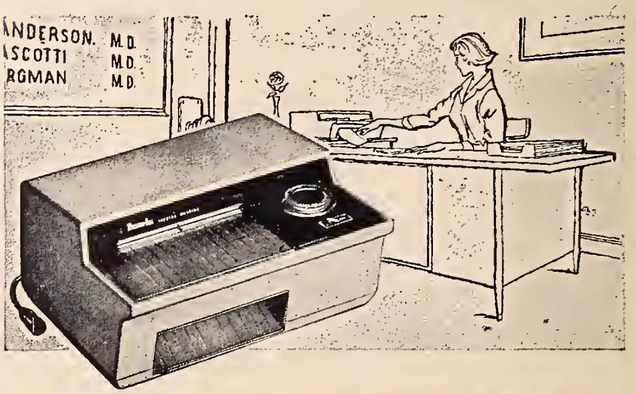
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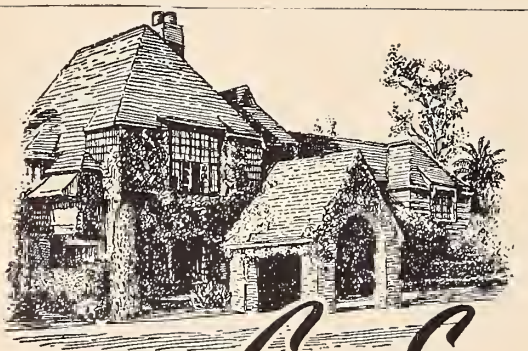

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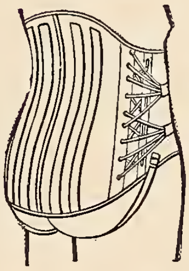

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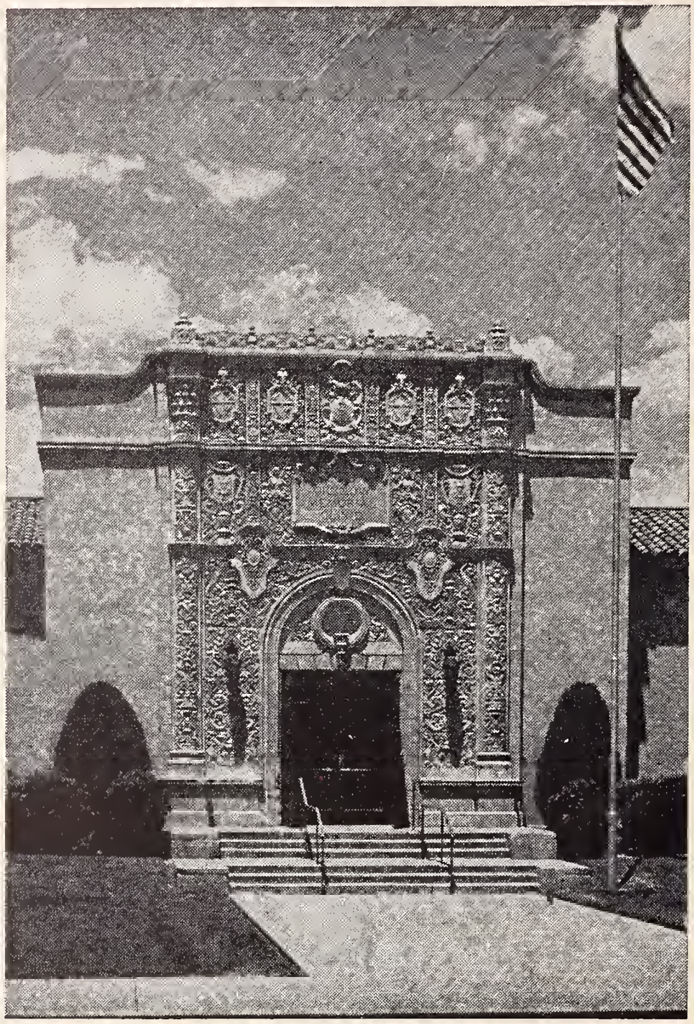

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Vomiting	5	4.5
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1. Goddard, E.S.: in *Trifluoperazine, Further Clinical and Laboratory Studies*, Philadelphia, Lea & Febiger, 1959.

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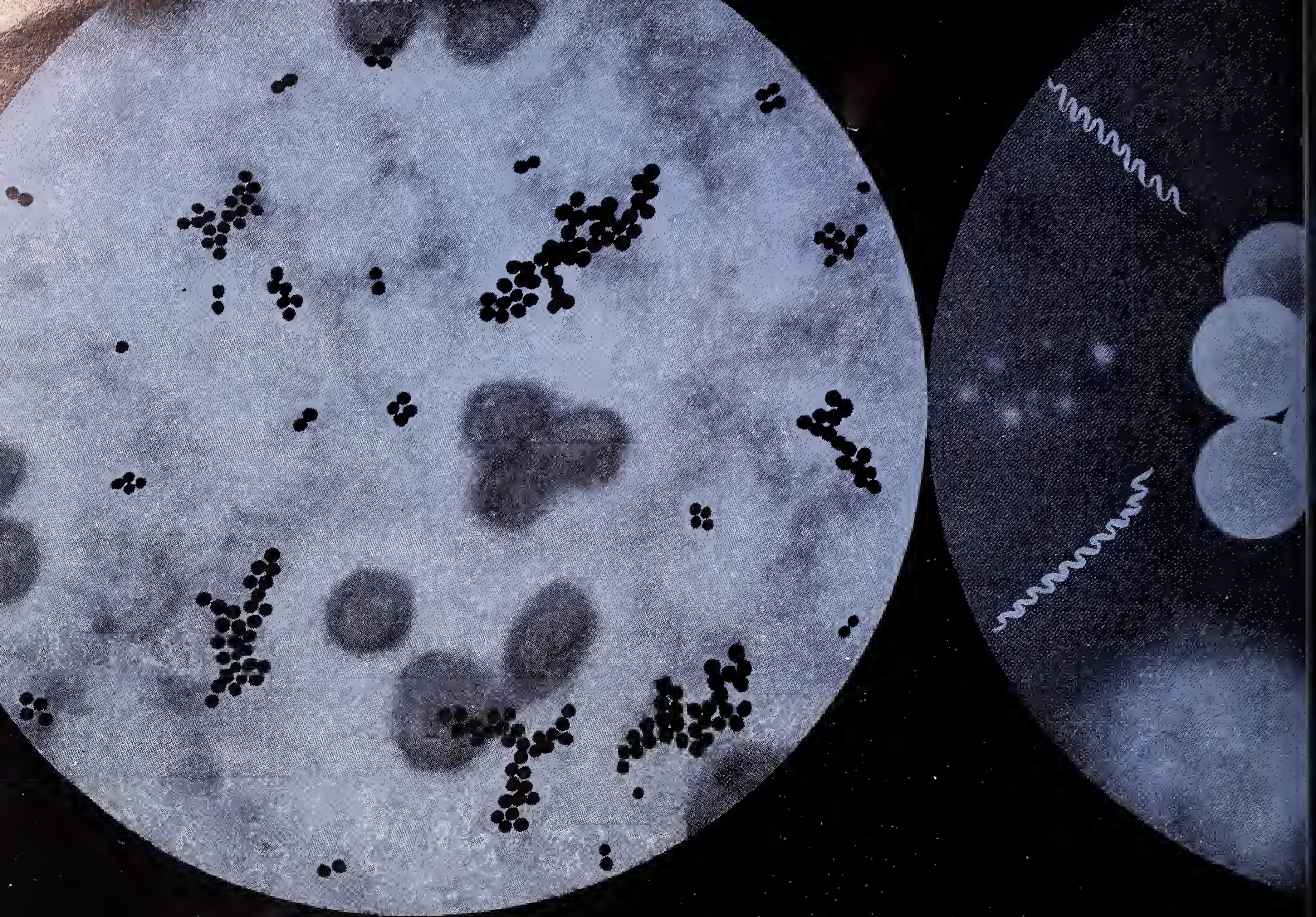

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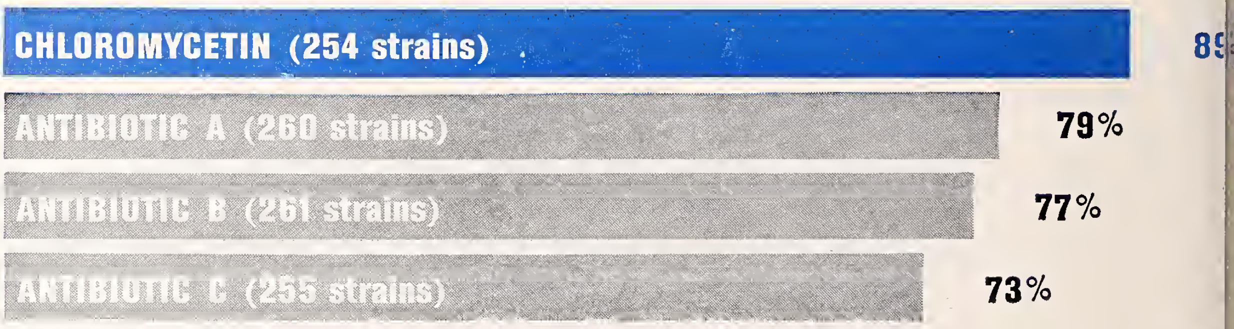

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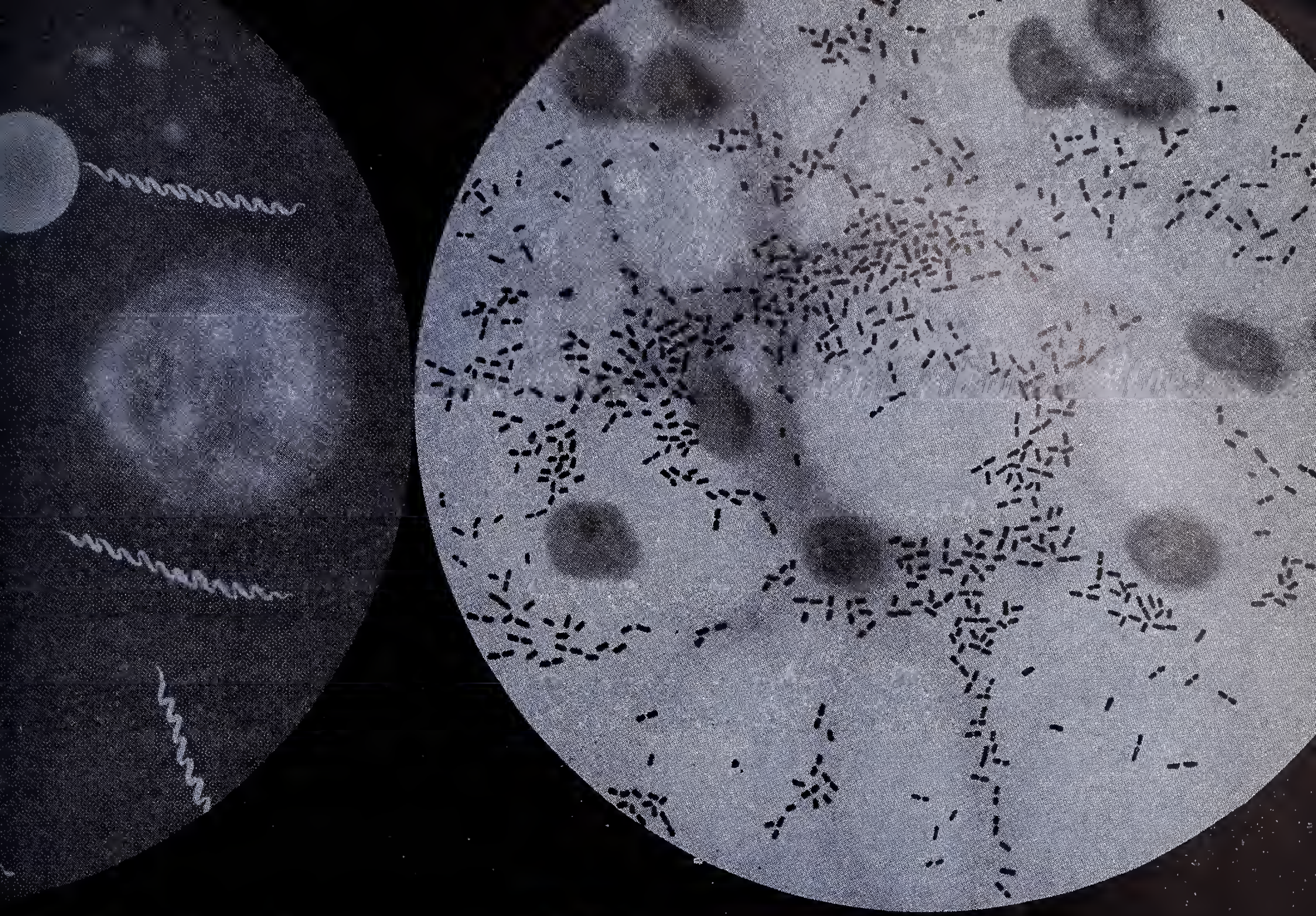

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References: (1) Morton, J. J.: *Yale J. Biol. & Med.* **31**:397, 1959. (2) Rogers, D. E., & Louria, D. B.: *New England J. Med.* **261**:86, 1959. (3) Leming, B. H., Jr., & Flanigan, C., Jr., in Welch, H., & Marti-Ibañez, F.: Antibiotics Annual 1958-1959, New York, Medical Encyclopedia, Inc., 1959, p. 414. (4) Edwards, T. S.: *Am. J. Ophth.* **48**:19, 1959. (5) Olarte, J., & de la Torre, J. A.: *Am. J. Trop. Med.* **18**:324, 1959. (6) Suter, L. S., & Ulrich, E. W.: *Antibiotics & Chemother.* **9**:38, 1959. (7) Holloway, W. J., & Scott, E. G.: *Delaware M. J.* **30**:175, 1958.

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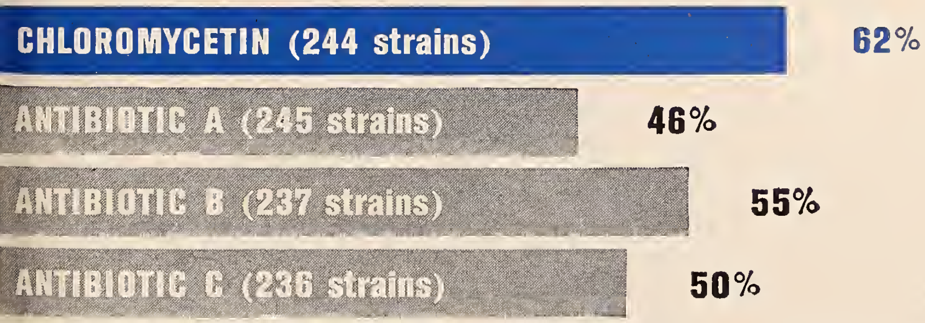

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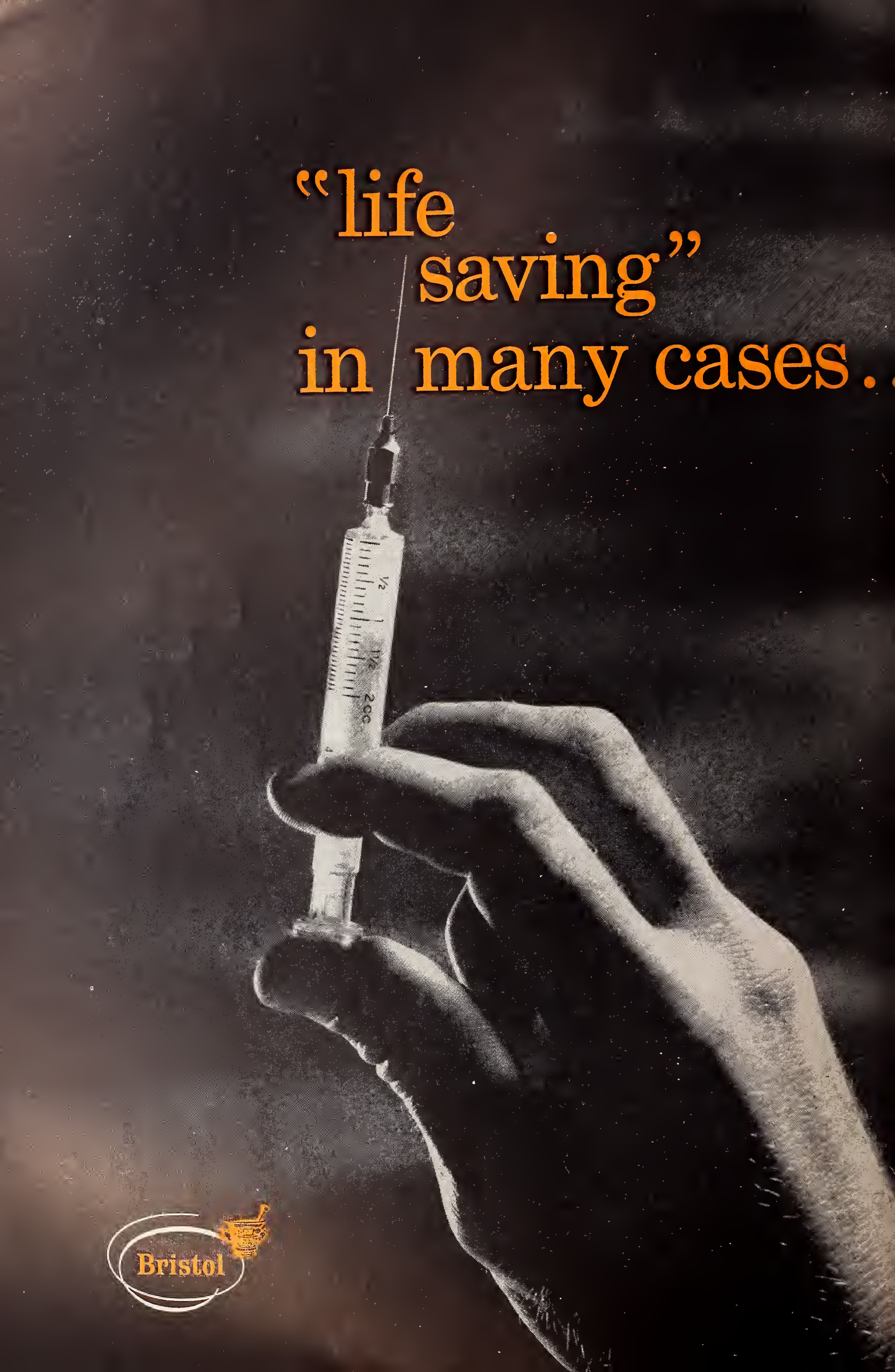
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REFERENCES: 1. Yow, E. M.: Practitioner 182:759, 1959. 2. Yow, M. D., and Womack, G. K.: Ann. N. Y. Acad. Sci. 76:363, 1958. 3. Bunn, P. A., Baltch, A., and Krajnyak, O.: Ibid. 76:109, 1958. 4. Council on Drugs, J.A.M.A. 172:699, 1960.

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April, 1960

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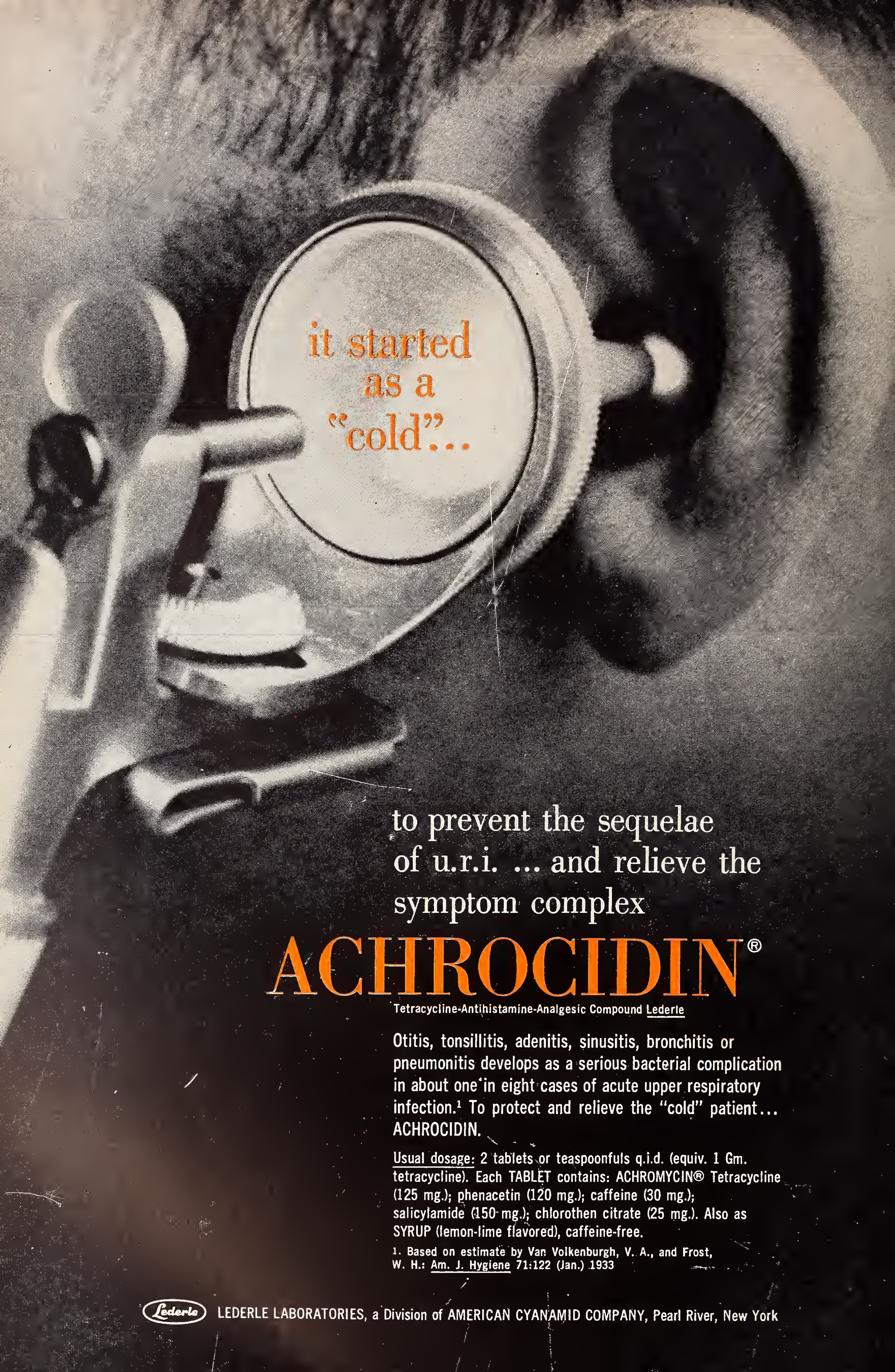
Published monthly by the Arizona Medical Association, Inc. Business office at 1021 Central Towers Building, Phoenix, Arizona. Subscription $5 a year, single copy 50 cents. Entered as second class matter March 1, 1921, at Postoffice at Phoenix, Arizona, Act of March 3, 1879.

(The Editors of the Journal assume no responsibility for opinions expressed in the articles contributed by individual members.)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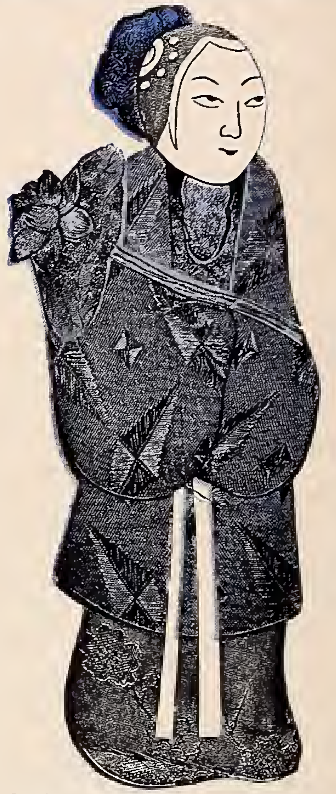

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Bagnall, A. W. (Univ. British Columbia, Vancouver, B.C.): A.M.A. Clinical Meeting (Scientific Section, Exhibit No. 124), Minneapolis, Minnesota, Dec. 2-5, 1958.

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Scherbel, A. L.; Harrison, J. W., and Atdjian, Martin: Cleveland Clin. Quart. *25:95, April, 1958.*

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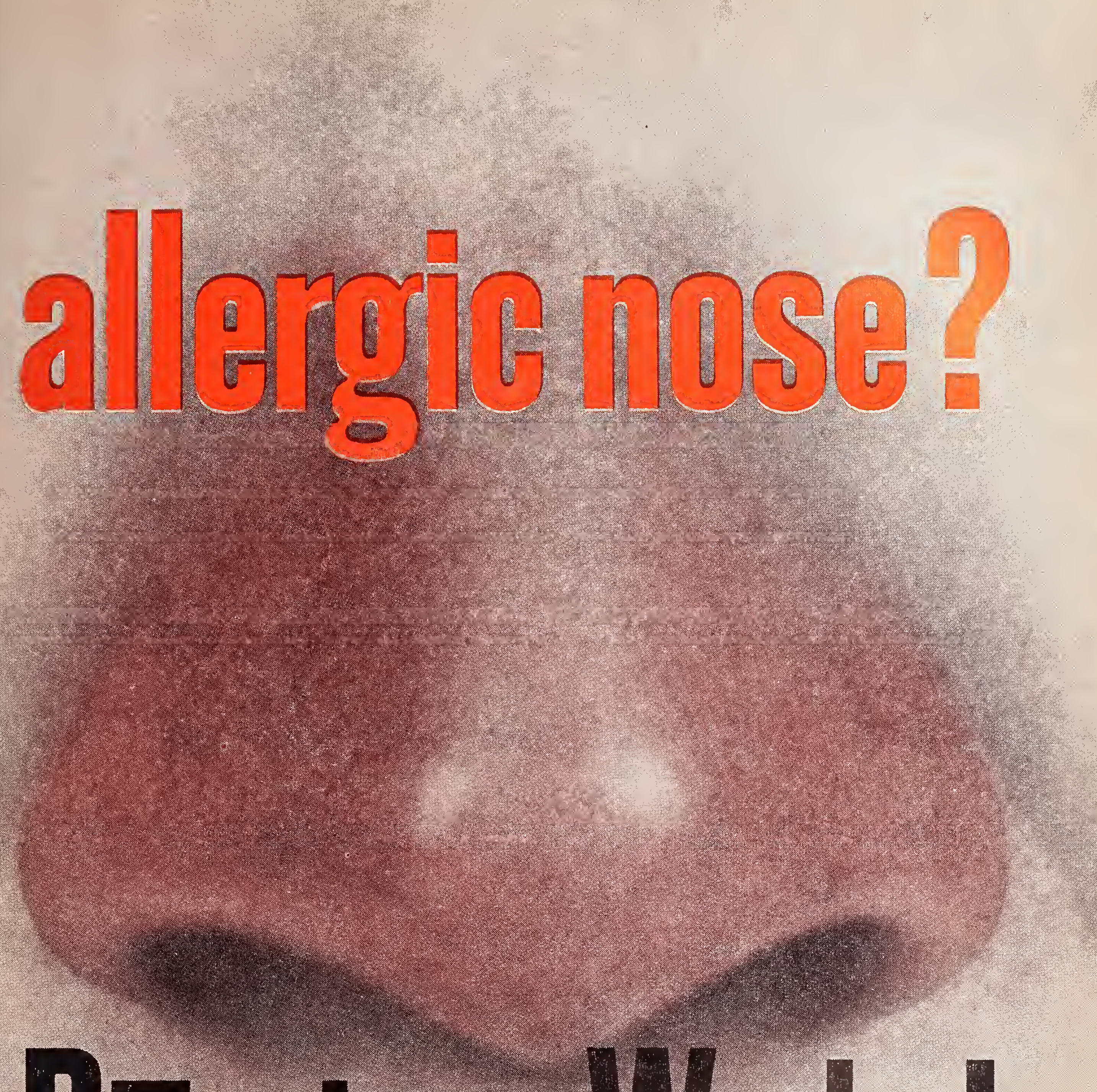

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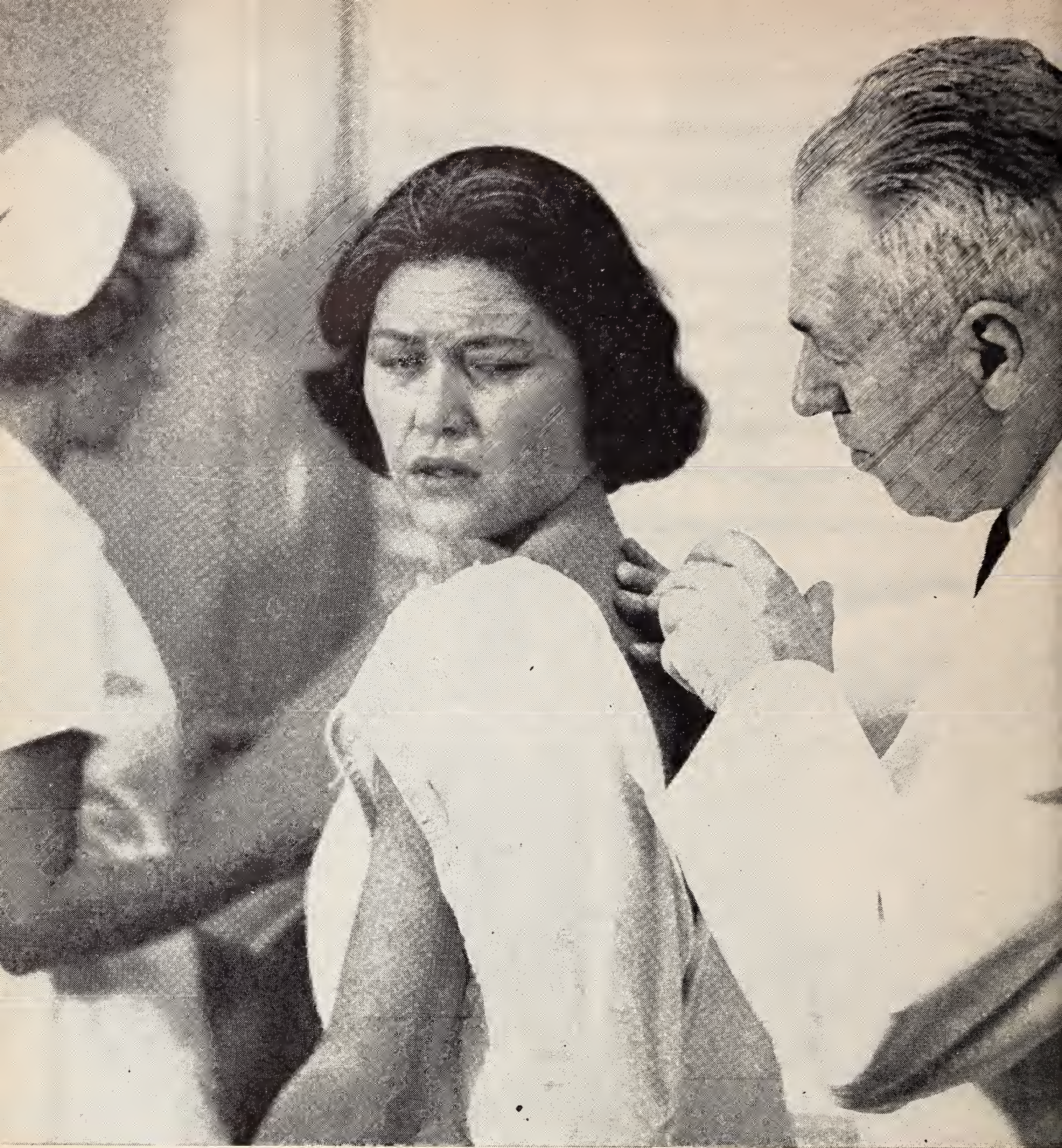

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BIBLIOGRAPHY (10 clinical studies, 714 patients):

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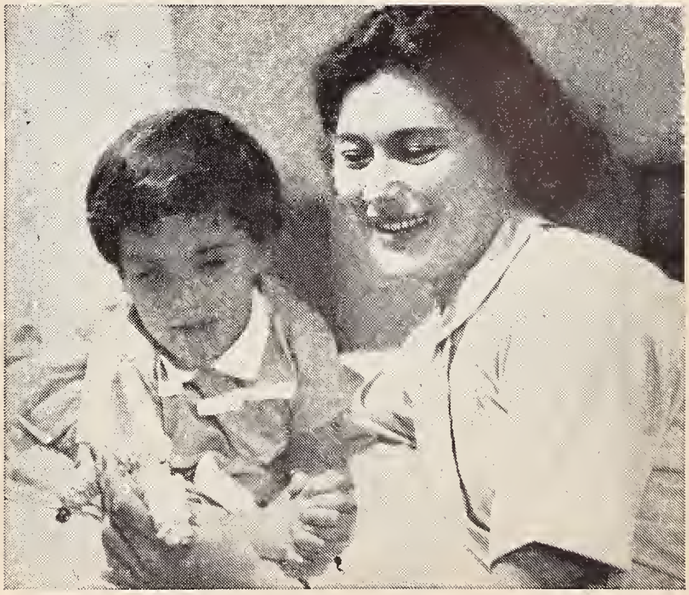

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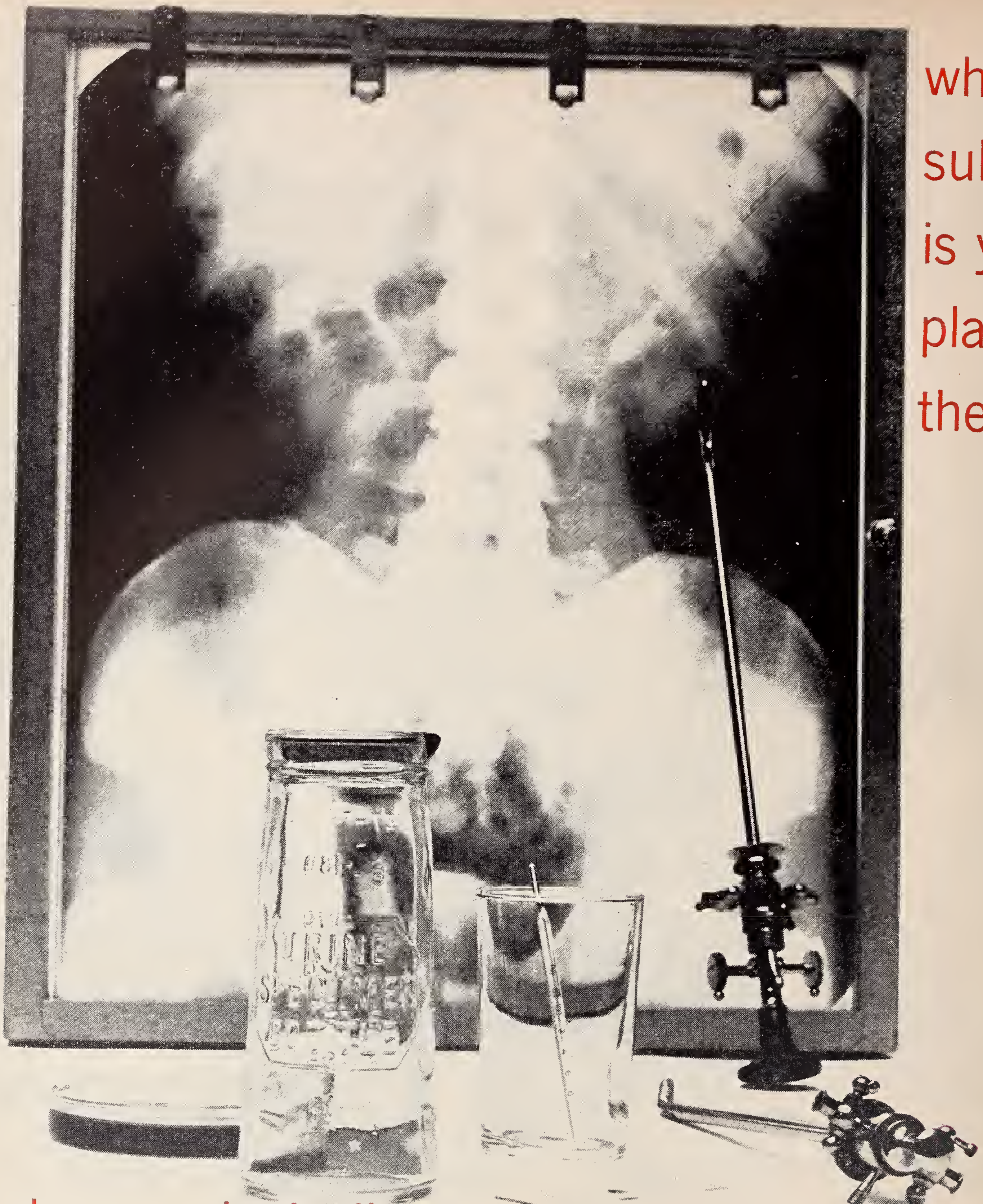

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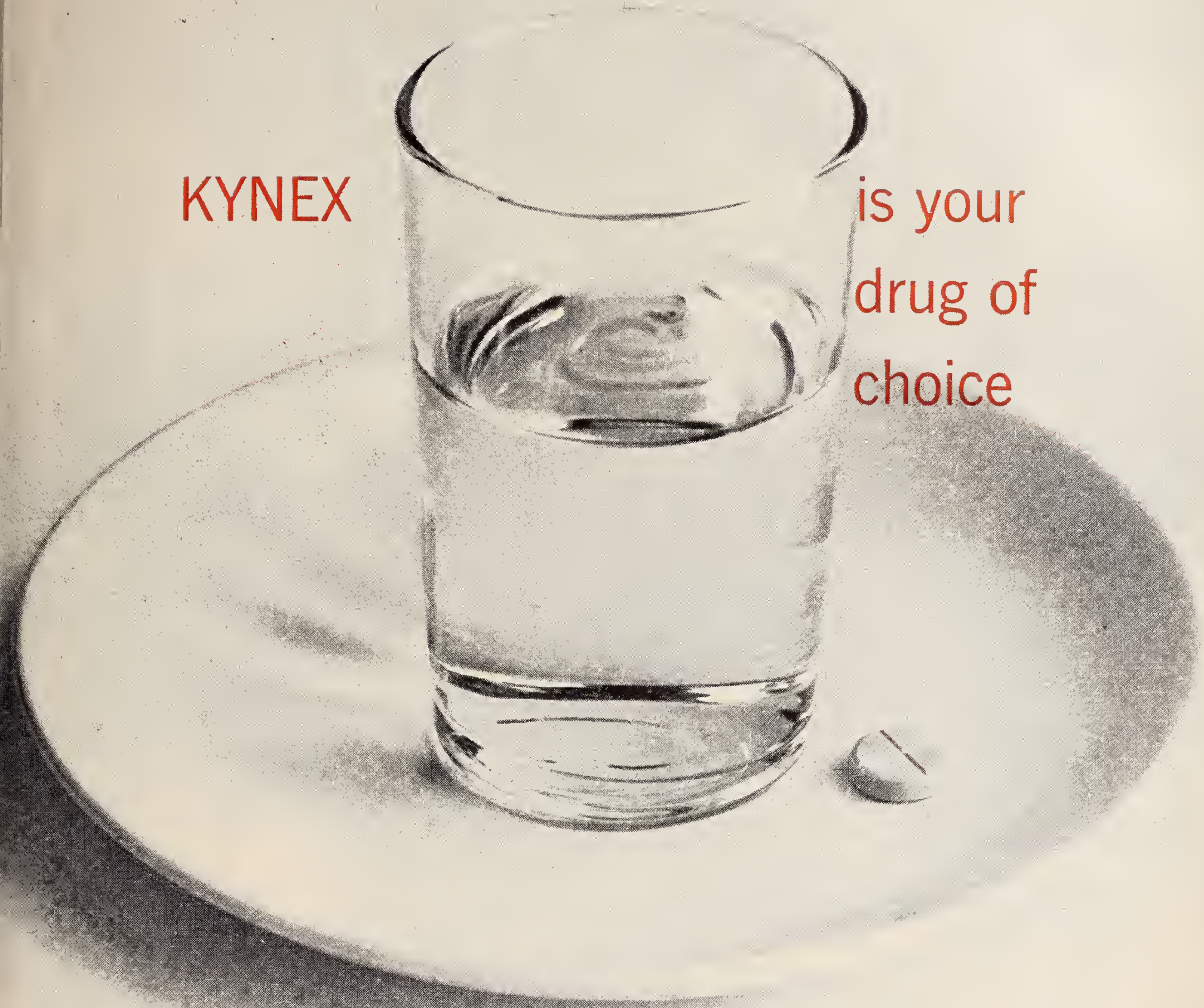
1. Boger, W. P.; Strickland, C. S., and Gylfe, J. M.: Antibiotic Med. & Clin. Ther. 3:378, (Nov.) 1956. 2. Boger, W. P.: Antibiotics Annual 1958-1959, New York, Medical Encyclopedia, Inc., 1959, p. 48. 3. Sheth, U. K.; Kulkarni, B. S., and Kamath, P. G.: Antibiotic Med. & Clin. Ther. 5:604 (Oct.) 1958. 4. Vinnicombe, J.: Ibid. 5:474 (July) 1958. 5. Anderson, P. C., and Wissinger, H. A.: U. S. Armed Forces M. J. 10:1051 (Sept.) 1959. 6. Roepke, R. R.; Maren, T. H., and Mayer, E.: Ann. New York Acad. Sc. 60:457 (Oct.) 1957.



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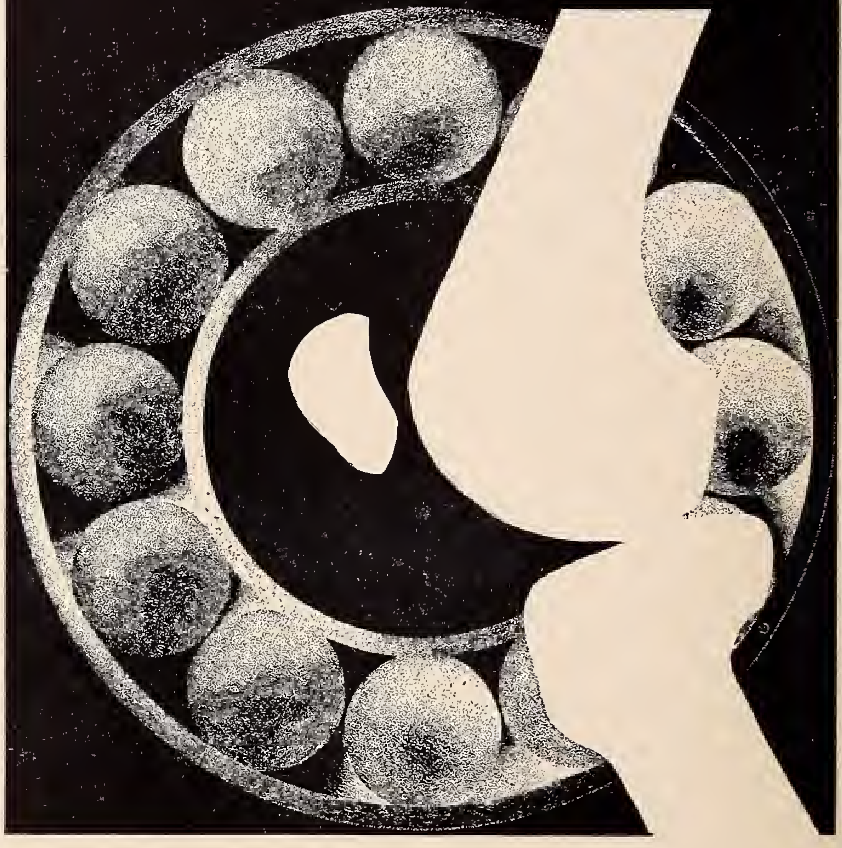

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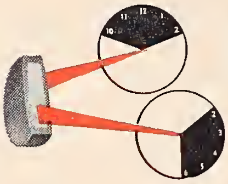

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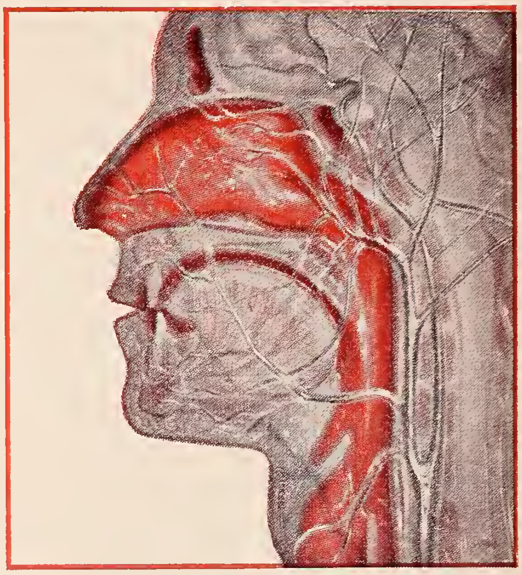

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2. Lhotka, F. M.: Illinois M. J.: *112*:259 (Dec.) 1957.
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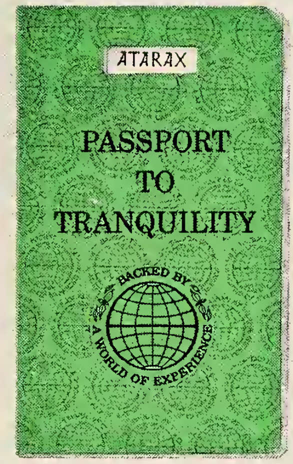

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IN ELDERLY PATIENTS well tolerated by debilitated patients	"...seems to be the agent of choice in patients suffering from removal disorientation, confusion, conversion hysteria and other psychoneurotic conditions occurring in old age." Smigel, J. O., et al.: J. Am. Geriatrics Soc. **7**:61 (Jan.) 1959.	Settel, E.: Am. Pract. & Digest Treat. **8**:1584 (Oct.) 1957. Negri, F.: Minerva med. **48**:607 (Feb. 21) 1957. Shalowitz, M.: Geriatrics **11**:312 (July) 1956.
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IN HYPEREMOTIVE ADULTS does not impair mental acuity	"...especially well-suited for ambulatory neurotics who must work, drive a car, or operate machinery." Ayd, F. J., Jr.: New York J. Med. **57**:1742 (May 15) 1957.	Garber, R. C., Jr.: J. Florida M. A. **45**:549 (Nov.) 1958. Menger, H. C.: New York J. Med. **58**:1684 (May 15) 1958. Farah, L.: Internat. Rec. Med. **169**:379 (June) 1956.

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PROTRACTED THERAPEUTIC EFFECT

Before the development of *Timed* AMO*dex* (Testagar) the usual dose of Dextro-amphetamine hydrochloride, for the control of appetite, was one 5 mg. tablet two or three times a day. The usual dose of Amobarbital ranged from 20 to 40 mg., two or three times a day. On such a dosage regimen the absorption of the drugs, after ingestion, takes place quite rapidly. The therapeutic activity occurs within one-half to one hour. When the therapeutic peak is reached, a gradual decline takes place. At this point, the patient should receive another dose of medication . . . the cycle is then repeated.

Patients frequently fail to follow the physician's instructions. They take medication at irregular intervals. When this occurs with drugs such as dextro-amphetamine sulfate, phosphate or hydrochloride, excitation may result. A balanced combination of Dextro-amphetamine hydrochloride, **the preferred salt,** plus a balanced daily dose of Amobarbital will give the expected therapeutic results *without* excitation.

Timed AMO*dex*, after ingestion, releases Dextro-amphetamine Hydrochloride and Amobarbital steadily and uniformly over a period of 6 to 10 hours. Therefore, the physician may dispense with the usual dosage schedule thereby *attaining better control of therapy.* The patient will receive the benefits of even and sustained therapeutic effects. Side reactions such as anxiety and excitation are greatly minimized.

AMO*dex* ADVANTAGES

- HIGH-LEVEL ANOREXIGENIC ACTIVITY WITHOUT NERVOUS EXCITATION
- SMOOTH, UNIFORM ACTION
- THERAPEUTIC EFFECT LASTING 6 TO 10 HOURS
- ONLY ONE DOSE DAILY
- CLINICALLY ECONOMICAL TO THE PATIENT

ACTION AND USES

Timed AMO*dex CAPSULES* (Testagar) supply the antidepressant and mood-elevating effects of Dextro-amphetamine hydrochloride and the calming action of Amobarbital. *Timed* AMO*dex* elevates the mood, relieves nervous tension, restores emotional stability and the capacity for mental and physical effort.

INDICATIONS

Timed AMO*dex* is the preferred treatment in anxiety states and in the management of obesity. *Timed* AMO*dex* may also be used in the treatment of Depressive states, Alcoholism, Nausea and Vomiting of Pregnancy.

DOSAGE The Daily Dose of *Timed* AMO*dex* (Testagar) IS ONE CAPSULE ON ARISING OR AT BREAKFAST.

SUPPLIED Bottles of 100 and 1000 capsules, available at all pharmacies. Also supplied in half strength as *Timed* AMO*dex*, Jr.

Timed AMO*dex CAPSULES* are manufactured under these patent numbers:
2,736,682 – 2,809,916
2,809,917 – 2,809,918
Which provide prolonged, continuous therapeutic effect over a period of 6-10 hours

SAMPLES AND LITERATURE UPON REQUEST

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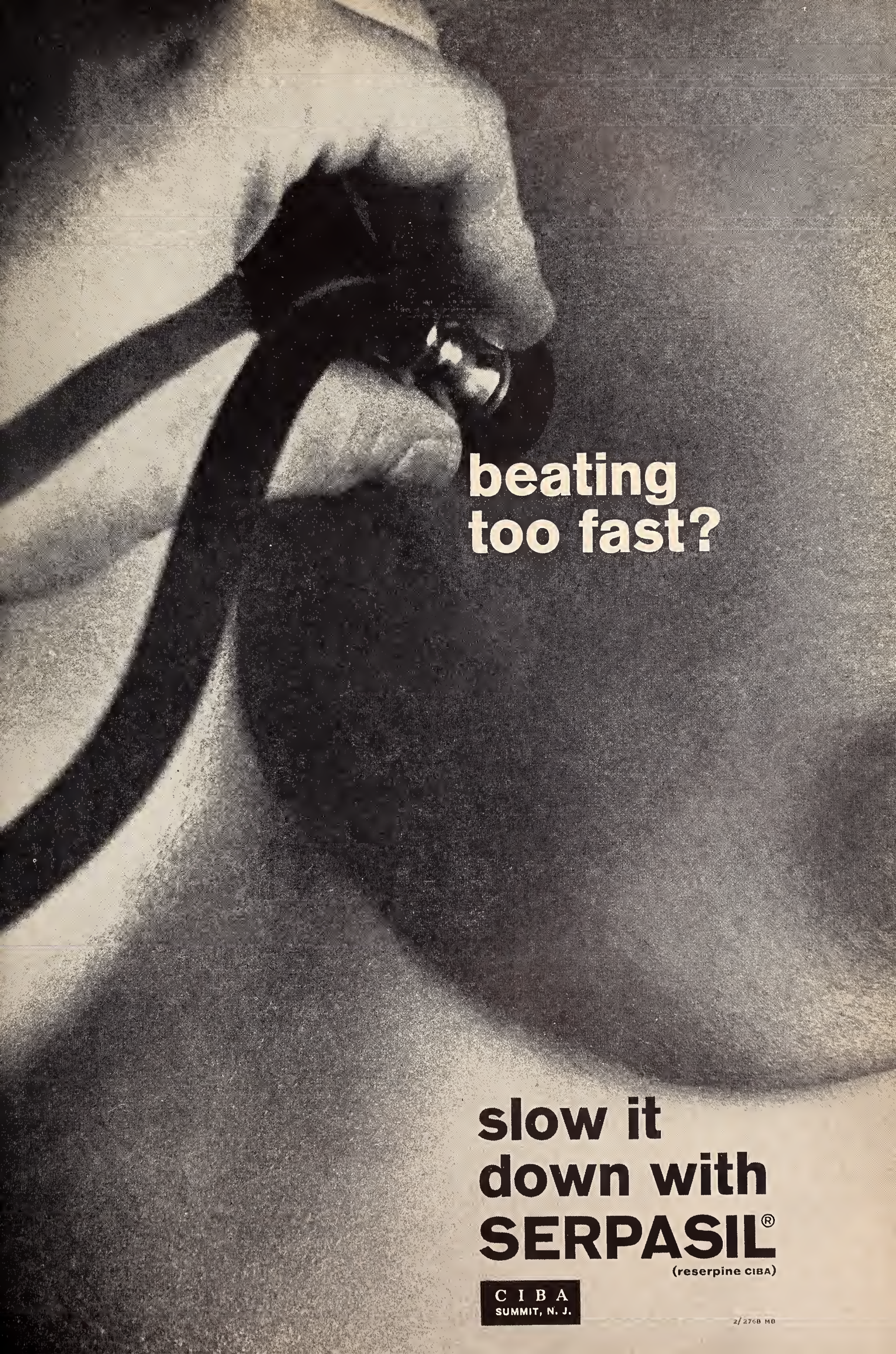
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Tetracycline Phosphate Complex (TETREX®) in the Therapy of PNEUMONIA

U.S. PAT. NO. 2,791,609

Preferably, antibiotic therapy should be based on pretreatment culture of the offending pathogen, but in bacterial pneumonia the problem may well be too pressing to permit the required delay of 24 to 48 hours. A differential diagnosis among bacterial pneumonias, based on such clinical grounds as speed of onset, sepsis and pain may guide the choice of antibiotic for initiation of therapy.

Should clinical judgment dictate that antibiotic therapy be started immediately, at the same time a sputum sample or a subglottic swab can be sent to the laboratory for culture and sensitivity studies. If the response to the first antimicrobial agent proves unsatisfactory, a reasonable basis for changing therapy will then be at hand.

Choosing the Antibiotic

Since therapy must be started at once for bacterial pneumonia, it is advisable to choose a broad-spectrum antibiotic that quickly produces high levels of active agent (e.g., tetracycline phosphate complex, TETREX). Such an antibiotic probably has the best chance of controlling the pathogen, whether it be gram-negative or gram-positive. And if the laboratory report shows that the invading organism is much less sensitive to tetracycline than to other agents, the patient can then be changed to an appropriate antibiotic. If the difference in sensitivity is slight, then the possibility of side effects, sensitization, and toxicity should be evaluated before changing therapy to another antibiotic.

The greatest number of bacterial pneumonias are caused by pneumococci, which respond very well to penicillin, tetracycline, and chloramphenicol. Also, these antibiotics are usually effective against the other gram-positive coccal pneumonias. But penicillin is ineffective against the viral pneumonias and the gram-negative *Hemophilus influenzae* and *Klebsiella pneumoniae*. Although *K. pneumoniae* causes only about 1 to 2 per cent of pneumonia cases on the average,[1] these are apt to be acute and fulminating (Friedländer's pneumonia), with a high mortality rate if not effectively treated. Since pneumococcal pneumonia may be difficult to distinguish clinically from Friedländer's, except by gram-stained sputum smear, it may be wiser to start treatment with an agent also effective against Klebsiella.

Penicillin, however, in addition to having a limited spectrum, also causes many minor and some serious sensitivity reactions. In a recent survey[2] it was found that penicillin produced severe skin reaction. But most important was the observation that anaphylactic shock, with a fatality rate of about 9 per cent, was the most frequent serious reaction. Such severe reactions are almost always associated with parenteral administration.

Tetracycline is also clinically effective in primary atypical pneumonia.[3]

The tetracyclines (e.g., TETREX) have the advantage of a broad range of antimicrobial activity and low toxicity. And in addition, the physician does not have to trouble himself or his patients with repeated blood studies when he prescribes TETREX. Minor reactions such as gastric upsets or mild skin rashes occur occasionally. The most serious side effects are staphylococcal and monilial overgrowth, but these are rare and can be adequately controlled.

No one would deny that appropriate antibiotic therapy has greatly reduced morbidity and saved many lives of patients with bacterial pneumonia. Nevertheless, general supportive measures in the care of patients remain important even today. Especially in the desperately ill patient, antibiotics are not considered as substitutes for the individual evaluation, clinical observation and judgment of the physician.

Some Micro-organisms Susceptible[a] to Tetracycline (TETREX)[b]

Streptococcus; Staphylococcus; Pneumococcus; Gonococcus; Meningococcus; *C. diphtheriae; B. anthracis; E. coli;* Proteus; *A. aerogenes; Ps. aeruginosa; K. pneumoniae;* Shigella; Brucella; *P. tularensis; H. influenzae; T. pallidum;* Rickettsiae; Viruses of psittacosis and ornithosis, lymphogranuloma inguinale, primary atypical pneumonia; *E. histolytica; D. granulomatosis.*

[a] Some strains are not susceptible.

[b] Table adapted from Goodman, L. S., and Gilman, A.: The Pharmaceutical Basis of Therapeutics. 2nd edition, New York, The Macmillan Co., 1956, pp. 1322-1323.

References: 1. Wood, W. E., Jr.: In: A Textbook of Medicine. Edited by Cecil, R. L., and Loeb, R. F., 9th edition, Philadelphia, W. B. Saunders Co., 1955, p. 145. 2. Welch, H.; Lewis, C. H.; Weinstein, H. I., and Boeckman, B. B.: Severe reactions to antibiotics. A nationwide survey. Antibiotic Med. & Clin. Ther. 4:800 (Dec.) 1957. 3. Keefer, C. S.: The choice of an anti-infective agent. In: Drugs of Choice, 1958-1959. Edited by Walter Modell, St. Louis, The C. V. Mosby Co., 1958, p. 135.

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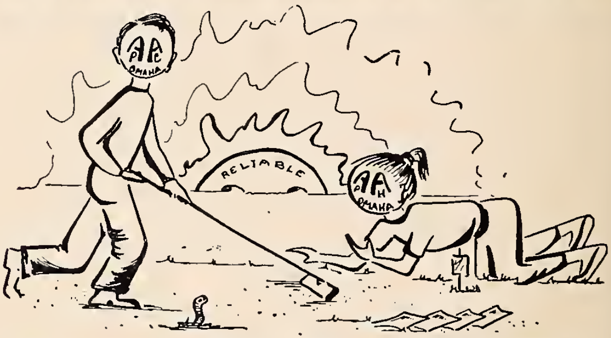

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In 100 consecutive patients with the low back syndrome, Kestler[1] reported that particularly gratifying was the ability of SOMA "to relax muscular spasm, relieve pain, and restore normal movement, thus speeding recovery in a large majority of the patients."

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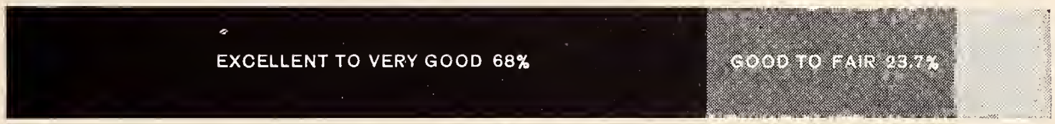

*Investigators' reports to the Medical Department, Wallace Laboratories. (Total of 278 cases)

NOTABLE SAFETY—extremely low toxicity; no known contraindications; side effects are rare; drowsiness may occur, usually at higher dosage

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SUPPLIED—as white, coated, 350 mg. tablets, bottles of 50; also available for pediatric use: 250 mg., orange capsules, bottles of 50

1. Kestler, O.: In The Pharmacology and Clinical Usefulness of Carisoprodol, Wayne State University Press, Detroit, 1959. 2. Berger, F. M.; Kletzkin, M.; Ludwig, B. J.; Margolin, S., and Powell, L. S.: J. Pharm. Exp. Ther. *127*:66 (Sept.) 1959. 3. Spears, C. E. and Phelps, W. M.: Arch. Pediat. *76*:287 (July) 1959. 4. Phelps, W. M.: Arch. Pediat. *76*:243 (June) 1959. 5. Friedman, A. P.; Frankel, K., and Fransway, R. L.: Papers presented at Scientific Meeting, New York State Society of Industrial Medicine, Inc., New York, Sept. 30, 1959. 6. Kuge, T.: Unpublished reports. 7. Ostrowski, J. P.: Orthopedics *2*:7 (Jan.) 1960.

Literature and samples on request

Also available on request: The Pharmacology and Clinical Usefulness of Carisoprodol, Wayne State University Press, Detroit, 1959. (185 pages)

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(carisoprodol Wallace)

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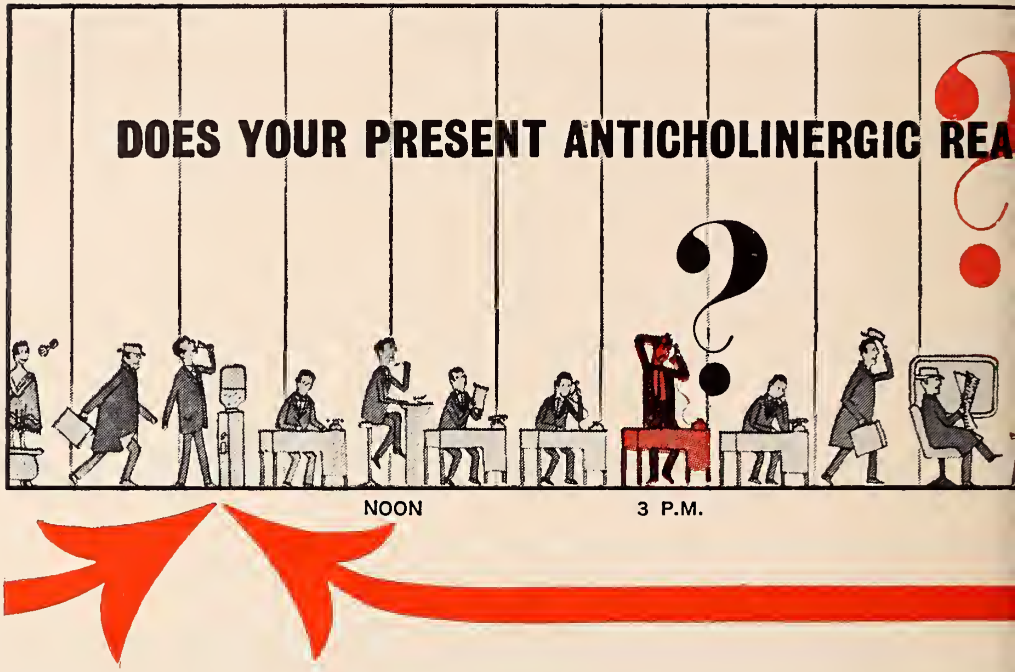
DOES YOUR PRESENT ANTICHOLINERGIC REA
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The test—you might say the acid test—of an anticholinergic is simple: will it protect your patient from hyperacidity around the clock, **even while he sleeps.** The weakness of t.i.d. or q.i.d. preparations is well recognized; but even some "b.i.d." encapsulations may be unreliable. McHardy, for instance, found a "widely variable duration of action, definitely less than that anticipated" in the "sustained," "delayed," and "gradual release" anticholinergics he studied.[1]

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Does the medication you now prescribe assure you of all these benefits? If not, why not put your next patient with peptic ulcer or G.I. dysfunction on therapy that **does.**

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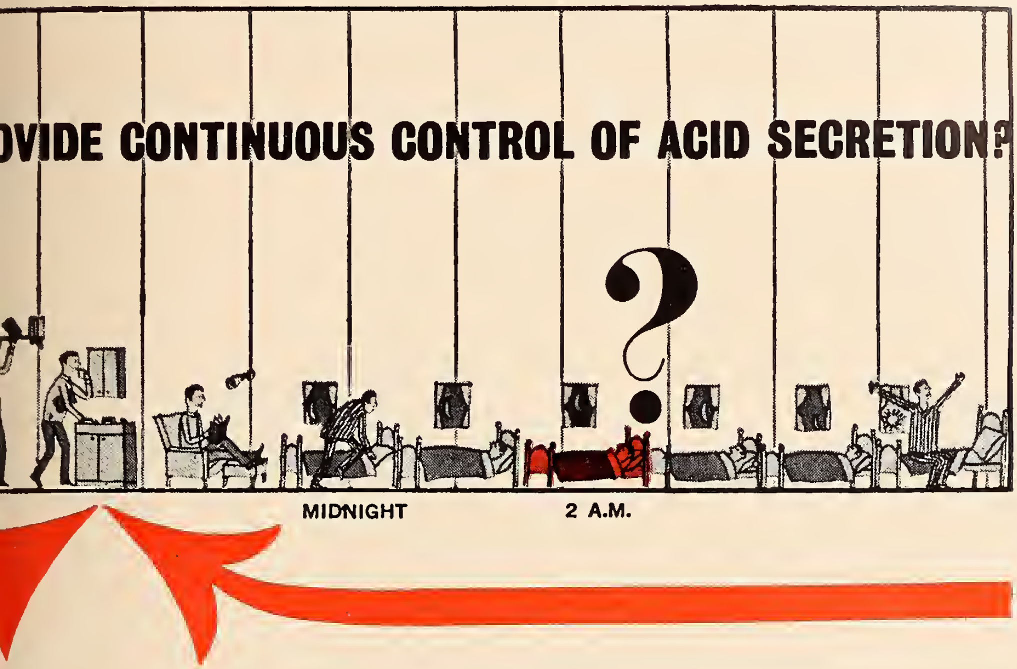
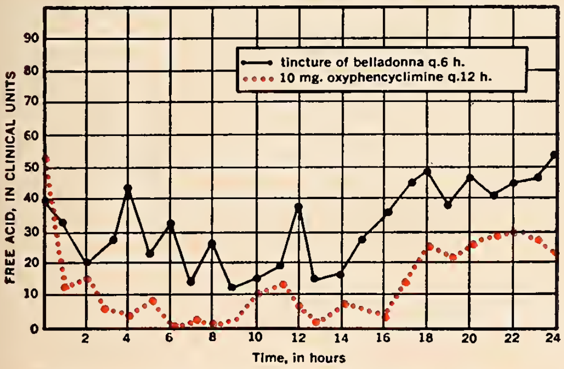

OVIDE CONTINUOUS CONTROL OF ACID SECRETION?
?
MIDNIGHT
2 A.M.

"Prolonged periods of achlorhydria" after 10 mg. oxyphencyclimine q. 12 h.[5]

MEAN GRAPH OF GASTRIC ACIDITY IN 4 PATIENTS RECEIVING COMPLETE THERAPEUTIC REGIMEN • 24-HOUR STUDY



Clinical Diagnosis: Peptic Ulcer—Gastritis—Gastroenteritis—Colitis—Functional Bowel Syndrome—Duodenitis—Hiatus Hernia (symptomatic)—Irritable Bowel Syndrome—Pylorospasm—Cardiospasm—Biliary Tract Dysfunctions—and Dysmenorrhea.

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Oxyphencyclimine HCl	10 mg.
Hydroxyzine (ATARAX®)	25 mg.

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Supplied: In bottles of 60 black-and-white scored tablets.

References: 1. McHardy, G., et al.: J. Louisiana M. Soc. 111:290 (Aug.) 1959. 2. Steigmann, F.: Study conducted at Cook County Hospital, Chicago, Illinois, in press. 3. Kemp, J. A.: Antibiotic Med. & Clin. Therapy 6:534 (Sept.) 1959. 4. Leming, B. H., Jr.: Clin. Med. 6:423 (Mar.) 1959. 5. Data in Roerig Medical Department files.

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Winkelstein, A.: Am. J. Gastroenterol. *32*:66-70 (July) 1959.

Additional information is available on request from the Medical Department, Pfizer Laboratories, Brooklyn 6, N. Y.

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*Knudsen, E. T., and Rolinson, G. N.: Lancet 2:1105 (Dec.19) 1959. 'CHEMIPEN' IS A SQUIBB TRADEMARK.

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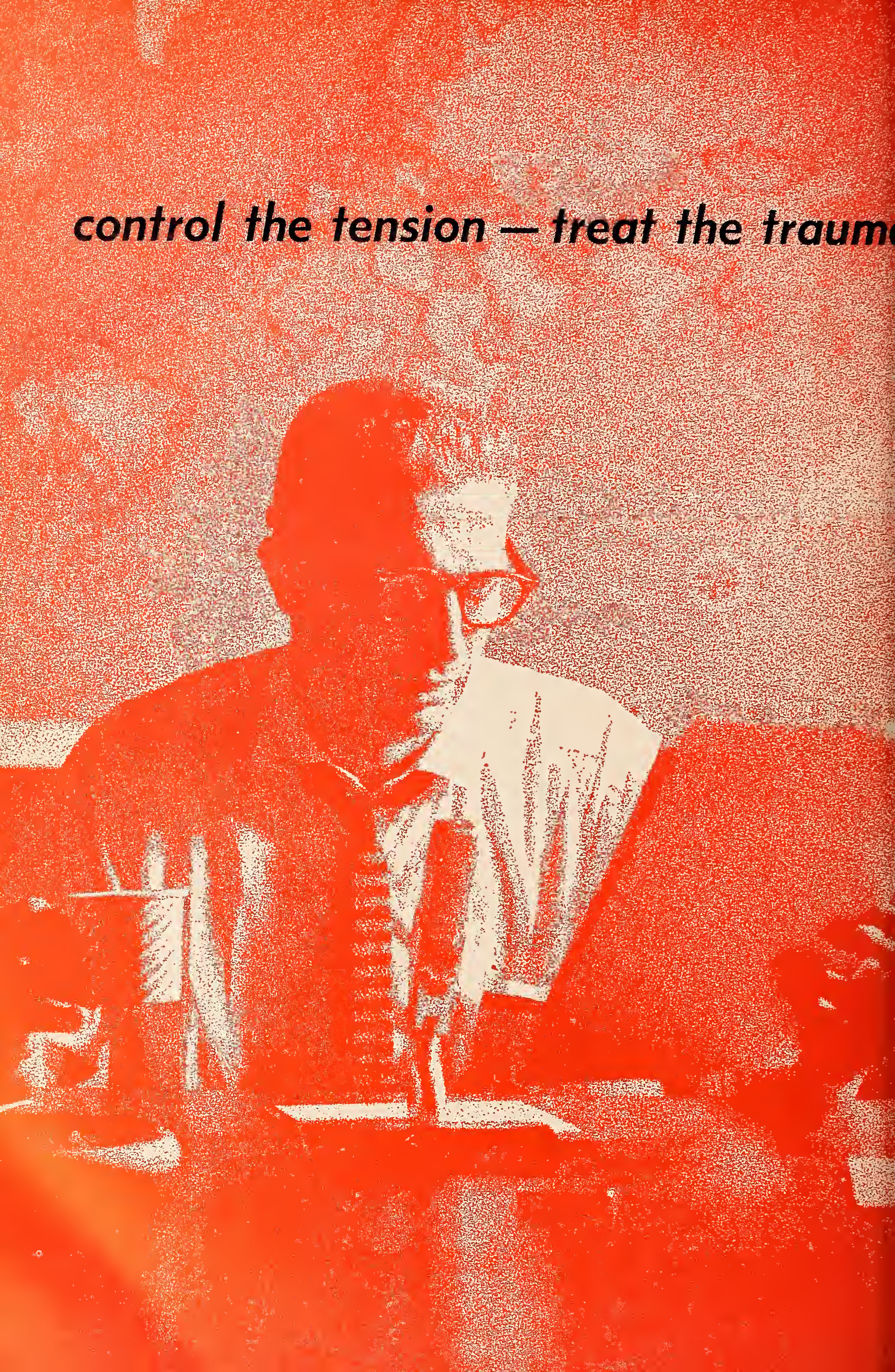

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1. Winsor, A. L., and Strongin, E. I.: J. Exper. Psychol. 16:589 (1933).
2. Ogden, E., and Southard, Jr., F. D.: Fed. Proceedings 5:77 (1946).
3. Adler, H. F.; Beazell, J. M.; Atkinson, A. J., and Ivy, A. C.: Quart. J. Studies on Alc. 1:638 (1941).
4. Salter, W. T.: Geriatrics 7:317 (1952).
5. Wright, I. S., Arteriosclerosis, in Steiglitz, E. J.: Geriatric Medicine, Philadelphia, W. B. Saunders Co. (1949).

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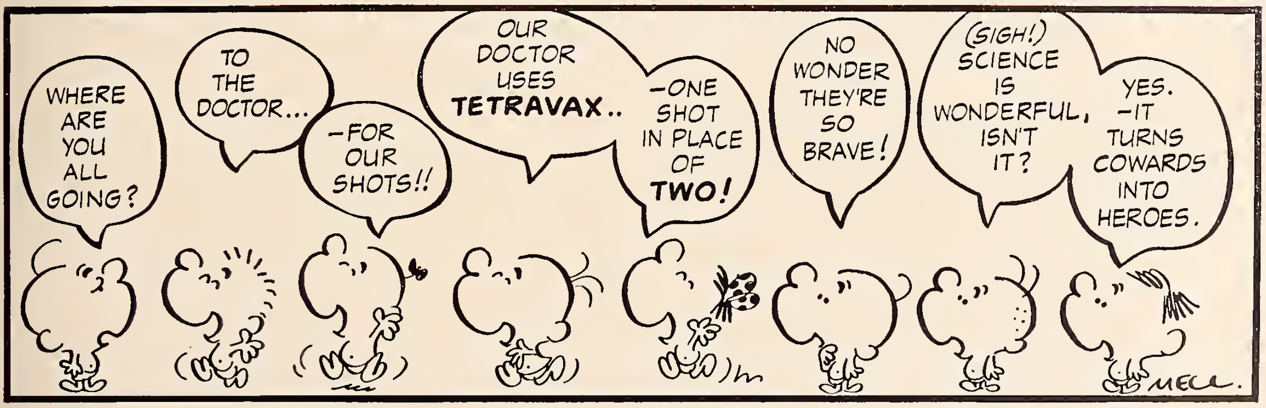
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**Berberian, D. A., and Slighter, R. G.: J.A.M.A.* 168:*2257 (Dec. 27) 1958.*

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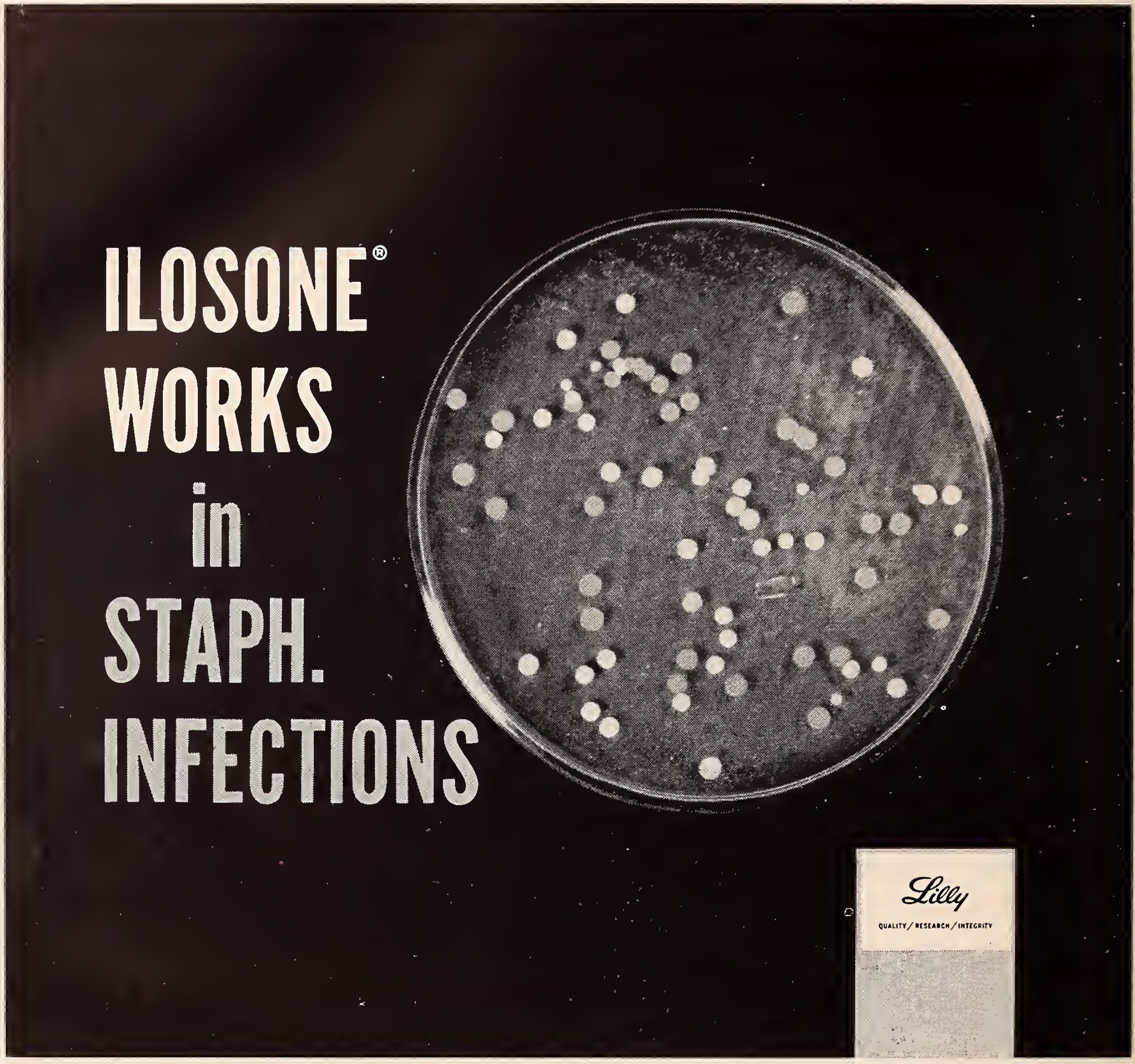

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1. Smith, I. M., and Soderstrom, W. H.: J. A. M. A., *170*:184 (May 9), 1959.

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ARIZONA MEDICINE

VOL. 17, NO. 4 APRIL, 1960

Laryngeal Carcinoma in Situ

by

Arthur Purdy Stout, M.D.*

New York, New York

"THANK you. It's a pleasure to be here with you, and it's a great pleasure also to find my old associate at Columbia, Dr. Golden. He and I worked together upon different problems for many years. He has just been talking to you about the diagnosis of cancer of the larynx in the stages where it has grown sufficiently large either to destroy tissue or to make a mass which can be demonstrated.

"There are stages of cancer in the larynx in which no obvious mass can be seen and there is no invasion of cartilage or deeper soft tissues. It is about that variety of cancer, particularly the non-invasive form, I would like to speak to you this afternoon.

"No one today can possibly have avoided hearing about carcinoma-in-situ. I think it is important to emphasize two facts: one, that carcinoma-in-situ can occur in any surface mucous membrane in any part of the body and, of course, in skin, too; and second, that it behaves and looks differently in different parts of the body. You don't want to get the impression from the information that has been furnished by cancer of the cervix uteri that in-situ- or pre-invasive cancer — call it what you will — occurs and behaves in exactly the same way in other parts of the body. When it occurs in the larynx it may cause no symptoms at all, or there may be a slight hoarseness and perhaps a cough. When the laryngologist looks down at the vocal cords and other parts of the larynx he may see nothing at all other than a little redness or a little roughness. The vocal cords move without impediment and everything seems to be relatively innocuous. Laryngologists have one good trait from the point of view of pathologists; they do not hesitate to take biopsies of suspicious areas in the larynx. That has given us an opportunity to determine the occurrence of carcinoma-in-situ in the larynx and to find out some of the facts about it. In the first place, its occurrence differs from that in the cervix in that it develops at the same average age as does invasive cancer. The average age for carcinoma-in-situ in the cervix is ten years younger than for invasive carcinoma. As in the cervix, carcinoma-in-situ in the larynx may involve one small patch or there may be multiple areas of involvement. It cannot be distinguished clinically from early superficial invasive cancer before fixation of the cord occurs because the symptoms and the signs are equally slight.

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*Extracted from address to Cancer Seminar, Tucson, Arizona, 23 January 1958.

"We had 312 cancers of the larynx, and in 48 of them there was carcinoma-in-situ. In 29 of these there was no invasion, in nine there was limited invasion, and in 10 there was marked invasion. Let us see what happened, as far as is known, to the 29 cases in the 'no invasion' group. Nineteen of them were alive and well at last report; 15 less than five years, four between five and ten years. Six of them had died of intercurrent disease without evidence of tumor. One patient died while being treated by radio-therapy from inability to swallow after the fifth or sixth month. Whether or not that was a recurrence we do not know because there was no further biopsy or autopsy. The other five died at ages varying from 67 to 85 years of the diseases of old age, and with no evidence of recurrence. Two died with laryngeal carcinoma. These probably had invasive cancer in some part of the larnyx that was not biopsied. Two were lost to the follow-up. The nine patients with limited invasion in the cords all had a good result. Where there was marked invasion most of the patients had a bad result — just as you might expect.

"The incidence of non-invasive carcinoma of the larynx is just the same as the incidence for invasive cancer. It is markedly predominant in males; 12:1 in all the cases of carcinoma of the larynx and 16:1 in the in-situ carcinomas.

"I would like to speak one word about the handling of these patients. Because of the fact that when there are multiple areas of involvement of the mucous membrane of the larynx, generally the removal by surgery of a cord or a single patch will not suffice to cure. It is my impression that radio-therapy may be better than surgery for non-invasive laryngeal carcinoma. I hope Dr. Collins will make some remarks about this when his time comes. However, in my opinion the larynx should not be treated by radio-therapy unless the therapist is fully experienced with treating that region. Otherwise, disaster may result."

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Pre - And Postnatal Irradiation Hazards For Infants And Children*

Clifford G. Grulee, Jr., M.D.

New Orleans, Louisiana

DEVELOPMENT of our knowledge of x-ray and other forms of irradiation dates only from November 8, 1895, and is an exciting though often tragic chapter in man's scientific progress. Roentgen did not know what he was dealing with when he noticed the glowing platinocyanide screen and discovered that the rays which were produced penetrated a deck of cards, a door, and a thick book. A great deal has been learned since that time concerning the physical characteristics of x-rays and the technical details of their use, but we are still relatively ignorant concerning many of their biologic effects.

Furth(1) has divided man's experience with irradiation into three periods. The first preceded the discovery of Roentgen rays and included the experiences of Bohemian miners who very frequently died of cancer of the lungs from the inhalation of dust while working with as yet unknown radioactive ores. Similar experiences were encountered in Colorado during the second half of the nineteenth century. The second period came immediately following discovery of x-rays, when nothing was known of the dangers associated with their use. Within a year of Roentgen's original work, x-rays had been adapted to use in fluoroscopy. No screening or other types of protective devices were used since none were considered necessary. By 1897, the first case of radiation sickness had occurred. Paterson states that within five years 170 cases of radiation injury were on record, and that by 1911, 54 cases of radiation induced cancer of the skin had been reported. One hundred radiologists had died from the effects of overexposure to x-ray by 1922, and finally, in 1927, Muller first described an increased frequency of gene mutations from radiation. The third, and current era of man's experience. with radiation, is characterized by the rather phenomenal safety record thus far established in the rapidly expanding use of radioisotopes in therapy, research and industry. It is the perpetuation of this record which constitutes one of the most critical tests of self-control ever faced by mankind.

Thus far, background radiation has been variously estimated to contribute a cumulative dose of between 3.1 r and 4.3 r over a period of 30 years and atomic explosions occurring between 1945 and 1955, according to Libby, have contributed an average exposure in the United States of less than 0.1 r or a dosage rate of 0.001 r per person per year. Because exposure to radiation is being increasingly used in medicine and because this is amenable to intelligent control by radiologists and other physicians, there has recently been a great deal of emphasis on the use and abuse of therapeutic and diagnostic x-ray and other forms of irradiation. Unforunately, several of the serious effects of ionizing radiation have been recognized in infants who were exposed either before birth or during early postnatal life.

The biologic effects of ionizing radiation are either immediate, prompt, or delayed sometimes for very long periods of time. The immediate effects, primarily erythema of the skin in the

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*Presented before the Ogden Surgical Society, Ogden, Utah, May 22, 1959.

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exposed area, are no longer inadvertently encountered, and do not constitute a major problem in diagnostic radiology. Similarly, radiation sickness can be anticipated as a calculated risk in the relatively massive irradiation of certain malignant diseases in children but, as an accidental occurrence, has been eliminated. There is, however, considerable variation in individual tolerance to radiation, and, as a consequence, the standards of radiology must be based on the range of tolerance of the most susceptible. Further, the damage produced by ionizing irradiation can be catastrophic early in fetal life and, in general, the younger a fetus or infant is at the time of exposure, the greater the injury that will result from a given dose. Generally speaking, stem cells, cells undergoing transition into specifie types, and rapidly growing tissues are most severely affected. As quoted by Robinow and Silverman(3), the Russels have suggested that serious fetal injury can result from as little as 25 r of radiation and Hempelman has demonstrated that one-fourth of an erythema dose over epiphyseal cartilage in infants or one-half of the same dose in older children will result in stunting of growth. In the past, irradiation of tubercular joints and in rare instances even repeated exposure of children to poorly engineered and screened fluoroscopic machines in shoe fitting have resulted in growth disturbances. Some reassurances are available in the studies of Neuhauser(4) with respect to effects of radiation on the growing spine in children. He found that an epiphysis must be exposed to more than 600 r to show growth retardation, and then, even when contour irregularities of the vertebra became apparent with dosages in excess of 2,000 r in children two years of age or younger, the stunting in longitudinal growth was so slight as to be barely detectible. At least it would seem that no immediate threat to growth exists in the exposures of the ordinary infant and child to necessary diagnostic radiology.

The genetic effects of irradiation in man are extremely difficult to evaluate. Many mutations are lethal and result in fetal wastage during intra-uterine development. These are often confused with failures to conceive, miscarriages, or abortions from other causes. It is important to realize that a mutation does not necessarily produce a physical monstrosity. In fact, mutational changes often involve some metabolic process such as an enzyme system. Further, some may be beneficial to the organism. All persons are not similarly susceptible to radiation injury and many local conditions modify the response of the cells to it. Among these are pH, oxygen tension, and temperature.

The effect of radiation injury on germ cells is cumulative and permanent in contrast to the considerable degree of recovery shown by somatic cells after similar injury. This is of some importance since a large single dose of radiation received by the body and affecting both germ and somatic cells may be less well tolerated by somatic cells than fractionated doses given over long periods of time which would not produce obvious somatic changes but which would produce progressively more severe germ cell damage.

All effects of genetic mutation do not show up immediately, but rather may be delayed for several generations if recessive characters are involved. It is also important to remember that radiation does not produce unique alterations but merely an accelerated rate of appearance of mutational changes. However, since the life span of man is relatively lengthy, convincing data on radiation induced mutations will not be available for many years.

There are several types of ionizing radiation and all can exert genetic effects. Electro-magnetic radiations are oscillating, do not have mass, and penetrate tissue in inverse proportion to their wave lengths. X-rays are on the short end of the spectrum of electro-magnetic radiations and infrared are on the long end. The other general type of ionizing radiation is particulate and has origin either in naturally occurring radioactive ores such as thorium, radium, et cetera, or is produced by man-made devices such as the cyclotron or the betatron. Alpha, beta and gamma rays and neutrons are particulate radiation and have varying abilities to affect human tissues but all are potentially more dangerous in this regard than are x-rays. The penetrating ability of particulate radiations is dependent upon the mass and the speed of the particle concerned. Beta rays are stopped by several inches of moist air or even by the keratin of the skin. Although it is usually stated that beta rays have 1,000 times the ionizing ability and alpha rays 100 times the ionizing ability of x-rays, it is now possible to vary the energy level of any of these forms of radiation and thus increase or decrease their penetrance. Neutrons, though they are not ionized themselves, cause the splitting off of electrons when they are absorbed by any substance and thus may produce damaging ionization. Generally speaking, the neutrons have a relative biologic effectiveness eight times that of x-rays. Muller has reported that the mutogenic effect of a given dose of x-ray, alpha, beta or gamma radiation is similar. The Russels and Mackey have found, however, that gamma rays and fast neutrons effect a greater mutation rate than other forms of radiation.

Two mechanisms probably operate to produce genetic effects. In the cells directly affected by ionizing radiation there may be chromosome breakage. In many instances this leads to the death of the cell, but there may be translocation of chromosome material with cell survival and resulting mutations. The second hypothesis assumes that cells not directly injured may be variously affected by chemical changes produced in their environment. Whatever the mechanisms, and probably both of those just mentioned apply, it is important to re-emphasize that radiation damage to germ cells is cumulative. This means that, for example, a gonadal dose of 10 r in a father would be added to a hypothetical dose of 20 r in his male progeny and would have to be added in turn to a possible dose of 40 r in his grandson to give an effective total irradiation of 70 r to the germ cells of the latter. At the present time the estimated gonadal dose rate is 0.095 per year. Of this, according to Holcomb, 22 per cent results from diagnostic radiology and 77 per cent comes from natural background radiation. Calculated from these data the maximum dose to the gonads over a 30-year period is less than 10 r (the permissible dose of the British and American Committees of Irradiation, and the National Bureau of Standards[5].

It has been estimated by geneticists that a total dose of 40 r is necessary to double the mutation rate. If, however, there is no minimum threshold below which genetic effects will not occur, it follows that even small exposures to radiation affecting the entire population will result in a very considerable increase in mutations. When it is realized that an exposure of 10 r could conceivably result from the injudicious use of diagnostic radiology the genetic hazards of irradiation have increased meaning.

Congenital anomalies, whether structural or metabolic, have become increasingly important as ways have been found to reduce mortality from other causes. They may result from a variety of circumstances among which are fetal hypoxia, deprivation of certain substances essential to normal growth and metabolic processes, genetic mechanisms, and, notably, damage directly to fetal tissues either from noxious materials crossing the placental barrier from the mother, or from ionizing radiation.

Although we do not know the effects of radiation before implantation of the human ovum on day 10 or 11, Rugh[6] and others have pointed out that the period from 18 to 38 days is the most radiosensitive period of fetal life. At this time the greatest number of embryonic cells are differentiating into adult types and during these transformations are extremely susceptible to injury. After about day 40, organ systems are largely established and much larger doses of irradiation are necessary to effect injury.

Much of what we know concerning the production of anomalies by irradiation of the fetus has come from comparisons with studies in experimental animals. If embryos of similar length are compared, very close parallelism exists between the embryologic development of the mouse and the human and every type of anomaly occurring in humans has been reproduced in mice after appropriate doses of irradiation[6]. Almost all such involve the central nervous system. At Hiroshima 64 per cent of unborn infants whose mothers were within 1,200 meters of the epicenter were microcephalic, not always at birth, but by 4.5 years of age. In addition to the marked and easily apparent congenital abnormalities, more subtle emotional and psychological changes may result which are almost impossible to assess because of the wide range of normal human variation.

Fractionated doses of radiation are particularly important in the production of congenital anomalies because they allow injury to occur in various body systems as these develop at different times during early fetal life. This is true in spite of the fact that some radiation damage from fractionated doses can be repaired even though damage from the same total dose given at one time is not reversible and, therefore, is quantitatively greater. As stated previously, the earlier in fetal life that radiation injury is sustained the greater will be the resultant damage.

For example, a transforming neuroblast cannot tolerate more than 40 r, whereas the adult type neuron is not destroyed by 10,000 r. The Russels believe that damage to a fetus can result from as little as 25 r[7]. Finally, even after the early fetal period of greatest radiosensitivity, random observations such as the frequent association of radiation with ocular lens injury in infants, and the sensitivity of the infant's and young child's thyroid gland to radioiodine support the generally held opinion that the young are probably more susceptible than adults.

The late effects of irradiation are less understood and objectively documented. Dunlap[8] feels that neoplasia is not necessarily a direct effect but is probably secondary to tissue changes which in turn eventually lead to the autonomous multiplication of abnormal cell forms. In reporting cases of post-radiation sarcomas of bone, Cruz et al.[9] suggest that areas of bone only slightly damaged by radiation may show abortive attempts at repair leading to neoplasia but that severely damaged areas do not have neoplastic potentialities. The dosage of irradiation necessary for their production is not definitely known. In all cases, however, there is evidence of marked injury to surrounding tissue and total doses (fractionated or otherwise) from 1,000 r to over 5,000 r are cited. Sarcomas of bone are late sequellae of irradiation and fortunately they are not common. Though rare in children, one patient of 12 years was included in the 1957 report of Cruz.

The appearance of an alarming number of x-ray burns and cancers of both skin and bone at about the turn of the century led to strongly expressed opinions such as the following quoted from The London Pall Mall Gazette which was included in a recent paper by Cade[10]: "We are sick of the roentgen ray; . . . " "But what we seriously put before the attention of the Government . . . that it will call for legislative restriction of the severest kind. Perhaps the best thing would be for all civilized nations to combine to burn all works on the roentgen rays, to execute all the discoverers and to corner all the tungstate in the world and whelm it in the middle of the ocean." This attitude appears ridiculous in the light of our present knowledge, but is an example of extremes in opinion which must be avoided in current appraisal of radiation hazards.

At present, public interest in radiation is based on a considerable knowledge of its great diagnostic and therapeutic usefulness as well as its dangers. We know that cancers of all types can be produced. Nevertheless, since Cade has shown that these postradiation sequellae may be delayed eight to 56 years, the threat is usually remote in time and hence difficult to relate to initiating radiation. Also, because the appearance of neoplastic diseases is delayed, the period of childhood has passed before many of them appear. Cancer of the thyroid and leukemia are exceptions that deserve individual discussion.

In 1957, Stewart, et al.[11] first reported on studies of children under 10 years of age who had died of leukemia or other malignant disease, comparing these with a similar group of healthy control children. The finding that abdominal irradiation (particularly pelvimetry) of the mother during pregnancy was two times as frequent in the cancer and leukemia group as in the controls was striking and was not explained by differing birth conditions, birth rank, social class or maternal age. These data stimulated Ford, Paterson and Treuting[12] of our faculty to initiate a similar study. They studied the incidence of malignant disease in children whose mothers had received abdominal irradiation during pregnancy, and, approaching the problem from this viewpoint, obtained results entirely comparable to those of Stewart. The number of cases (152) is not great and the results, though very suggestive, still do not finally prove a casual relation between radiation and cancer. Similarly, Stewart's work is not conclusive and positive correlations also were found for these conditions and maternal viral infections, threatened abortion and mongolism. The occurrence of leukemia 12 times more frequently than would have been otherwise expected following atomic irradiation at Hiroshima where dosage was relatively great, is unquestionable. Similarly an eight-fold increase in incidence among radiologists and a greater than usual occurrence after x-ray therapy for spondylitis in adults[10] support a definite relation to irradiation. Further evidence of a cause and effect relationship is furnished by extensive studies of radiation-induced mouse leukemia. Kaplan[13] has reported that leukemia which usually is produced in certain strains of mice by total body irradiation, can be prevented by shielding one leg of the animal or of giving an unshielded animal a homologous bone marrow transfusion. It is, therefore, believed that in the normal marrow of this experimental animal there is a leukemia inhibiting factor.

Simpson and Hempelman[14], Dameshek[15], Polhemus, et al[16] and others have cited the increase in leukemia among children who have received thymic irradiation. However, in the studies of Simpson, et al[14], no leukemia was encountered following "prophylactic" irradiation of a thymus when it appeared of normal size on x-ray examination. It is probably of some importance that the radiation dose sufficient to effect reduction in the size of the gland is not great, and does not destroy the tissue as evidenced by the fact that a return to pretreatment size often occurred within six ot eight weeks. In an excellent review, Furth[1] describes experiments supporting the existence of a leukemogenic factor in the thymus gland. It has been found that thymectomy inhibits the disease and that implantation of thymic tissue in a thymectomized animal restores susceptibility to leukemia. Most workers seem to agree that leukemia is not a direct result of irradiation but, as in other types of cancer, initiates a series of cellular changes that at some point begins to give rise to leukemic cells. There is even some work in mice to indicate that radiation may liberate or in some way potentiate a virus which in turn produces the leukemic changes.

One further type of cancer, namely, that involving the thyroid gland, deserves separate consideration. Clark[17], reviewing the reported incidence of thyroid cancer in children, was able to find only eight cases under 15 years of age between 1900 and 1930, but thereafter encountered an apparently progressive increase up to 50 cases reported from 1941 to 1950. Winship[18], compiling data from six studies of nodular goiter in children, arrives at an average occurrence of carcinoma of 29 per cent in these patients (extremes: 19.3 per cent and 50 per cent). Two-thirds of the 189 cases were in females and the average age at diagnosis was 9.6 years.

As Cannon[19] has indicated, irradiation for benign disorders may produce more disabling tissue changes than the condition for which the treatment is given. This is certainly the case with thymic enlargement in children and with such conditions as chronic cough, cervical adenitis, enlarged tonsils and adenoids or peribronchitis which in the past have served as indications for irradiation but which we now know are not justifications for utilizing a potentially dangerous form of therapy. Both thyroid nodules and thyroid cancer have been demonstrated to be increased in children who have received 200 r to 800 r to the area of the thymus. Furthermore, the chance of malignant disease increases with increasing dosage and with the number of times that the patient is exposed to irradiation.

There is a high rate of metastsis in thyroid cancer in children and frequently the malignant process has spread to distant parts of the body by the time a diagnosis is reached. Fortunately, these metastases may be controllable by the use of radioiodine following thyroidectomy, but even so, the estimated five-year survival rate in Winship's study was 20 per cent[18]. More evidence must be accumulated concerning this relatively infrequent form of cancer in children before a relation to irradiation can be proved, but the striking parallelism of preceding x-ray therapy and subsequent malignancy of the thyroid is most suggestive. It has been postulated by Simpson that a thyroid gland, damaged by x-ray in infancy and subsequently exposed to overstimulation by pituitary thyrotropic hormone during puberty, reacts by the formation of nodules and/or tumors. Sinee, in experimental animals, the thymus and the thyroid glands demonstrate a conspicuous ability to inactivate thyrotropic hormones, it can be postulated that damage to both structures may be important in the etiology of thyroid cancer.

Awareness of radiation-related neoplasia in children imposes the obligation that these tragic occurrences be minimized. A discussion of appropriate preventive measures must first focus upon the pregnant or potentially pregnant woman. It is reasonable that a menstrual history be obtained before even diagnostic irradiation of a woman in the child bearing period be undertaken. Pregnancy is notoriously difficult to diagnose in the first three to six weeks during part of which time the critical process of fetal organogenesis takes place. When pregnancy is known to be present, any x-ray procedure or use of isotopes which is not a life-saving measure should be most carefully considered and whenever possible avoided. Undoubtedly there are indications for x-ray pelvimetry of the pregnant woman, but in view of the findings of Stewart and those of Paterson, physicians must be increasingly discerning in the use of this procedure. In infants and children irradiation in general must be kept at as low a level as possible unless it is used in connection with malignant disease. This does not mean, obviously, that diagnostic procedures must be interdicted, but, rather, that they be kept at an intelligent minimum. Fluoroscopy should never be used if a film will serve adequately. Usual exposure for a chest film is equivalent to only one-fourth of a second of fluoroscopy to the same area. When fluoroscopy is necessary, dark adaptation must always be accomplished and brief exposures through the smallest practical field must be utilized. Most fluoroscopic units are designed for the examination of adults, and, therefore, may cause gross overexposure if not adjusted for children whose bodies are smaller and less thick. By the same token, diagnostic radiology must be carefully regulated; we must resist the temptation of repeated surveys for bone age and frequently repeated x-ray films of the teeth. There is no longer any justification for fluoroscopy in shoe fitting and, as a matter of fact, machines for this purpose have been outlawed in most states.

The most important single measure which must always be thought of in the protection of infants and children from excessive radiation is proper shielding of all parts of the body not in the immediate target area. Because infants are small and are hard to immobilize, there is a tendency, even in taking a simple x-ray of the chest, to expose a larger part of the patient's body than necessary. This must be avoided whenever possible and particular attention must be directed toward shielding the gonads for reasons that have already been discussed.

In 1953 in the United States 125,000 x-ray units were used for 25 million examinations without, to my knowledge, any compulsory inspection for calibration, screening, et cetera. A particularly great responsibility rests with the practicing physicians who in a vast majority of instances are not adequately trained in radiology but maintain x-ray equipment in their private offices. This problem becomes particularly difficult in view of the general public's acceptance of or even preoccupation with x-ray examination. In the face of urging by parents for an x-ray, it is not easy to explain the potential hazards of radiation without, at the same time, creating unnecessary anxieties or outright misunderstandings which may interfere with acceptance of essential x-ray examinations at some future time. Widespread dissemination to the public of factual information concerning irradiation would be most helpful, and legislation requiring the registration and periodic inspection of x-ray equipment and operators is needed.

Technical refinements in both diagnostic and therapeutic x-ray machines are constantly being devised and give promise that currently used exposures can be greatly reduced in the future. Electronic image intensifiers are an important recent advance in fluoroscopy which have the added advantage of reducing the necessity of dark adaptation. Every encouragement should be given to all such technical improvements. Major emphasis should be directed toward improving the skill of our technicians so that patients will be properly positioned, adequately instructed as to their part in the procedure, and exposed to a correctly calculated amount of radiation so that a single exposure will result in films of good quality and repeat examinations will not be necessary.

Conclusion

The production of fetal anomalies by the direct action of ionizing radiation upon differentiating embryonic cells has been amply demonstrated. Similarly the genetic consequences of irradiation which are probably accumulative without relation to a minimum threshold are well documented. The production of growth arrests in growing children as well as the immediate and delayed production following medical x-radiation and particulate radiation of tumors, particularly carcinoma of the thyroid, sarcomas of bone and leukemias, has been confirmed repeatedly. We must base our future policies upon the tolerance of the most susceptible in our population, upon a full understanding of the cumulative effects of radiation and upon the generally accepted hypothesis that a linear relation exists between dosage and radiation injury. From a practical standpoint, we must exercise extreme caution in utilizing ionizing radiation in any pregnant woman. In infants and children there should be a general rule to use it most conservatively in treatment and even in diagnosis dealing with nonfatal conditions. When indicated, x-irradiation for either therapeutic or diagnostic purposes should be used without hesitation but with careful attention to technical details and particularly on proper shielding of the patient's body outside the target area. Finally, levels of irradiation to be expected from the judicious use of properly designed and operated x-ray equipment and isotopic preparations are well within estimated permissible doses at the present time, and many of the tragic errors of the past are being or will be corrected in the light of present knowledge.

It is appropriate, in bringing this discussion to a close, to pay respect to the progressive and self-critical attitudes and practices of our radiologist colleagues. It would be well for all physicians to seek their advice and follow their precepts.

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FALL-OUT FILTERS

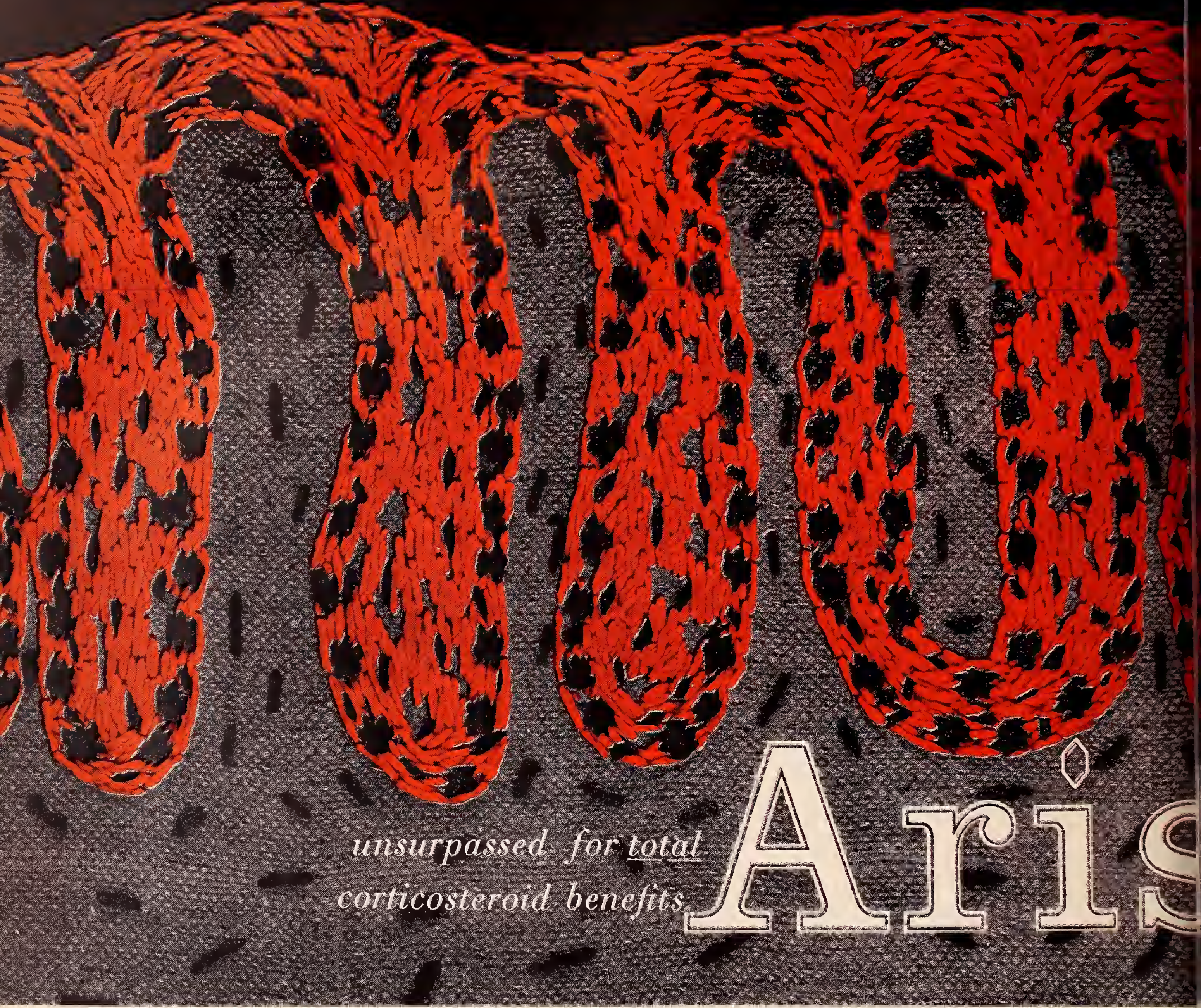
A recent study was conducted to determine the best respiratory protective ability of items of common usage against fallout. Eight household items were selected, and the evaluation program was performed by human subjects. At least 30 tests were made on each item.

By elimination, the man's cotton handkerchief (8 folds) and the bath towel (2 folds) were found to be the best respiratory protection against particulate matter.

HEALTH INFORMATION SURVEY

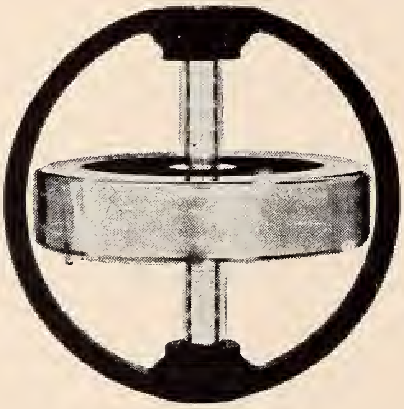
From 1953 through 1958, spending for health services increased more rapidly for people 65 and over, and for children under 6, than for any other age group in a recent Health Information Foundation survey. While per capita spending for all age groups increased 42 per cent during the survey period, spending went up 74 per cent for those 65 and older, and 71 per cent for children under 6.

in allergic and inflammatory skin disorders (including psoriasis

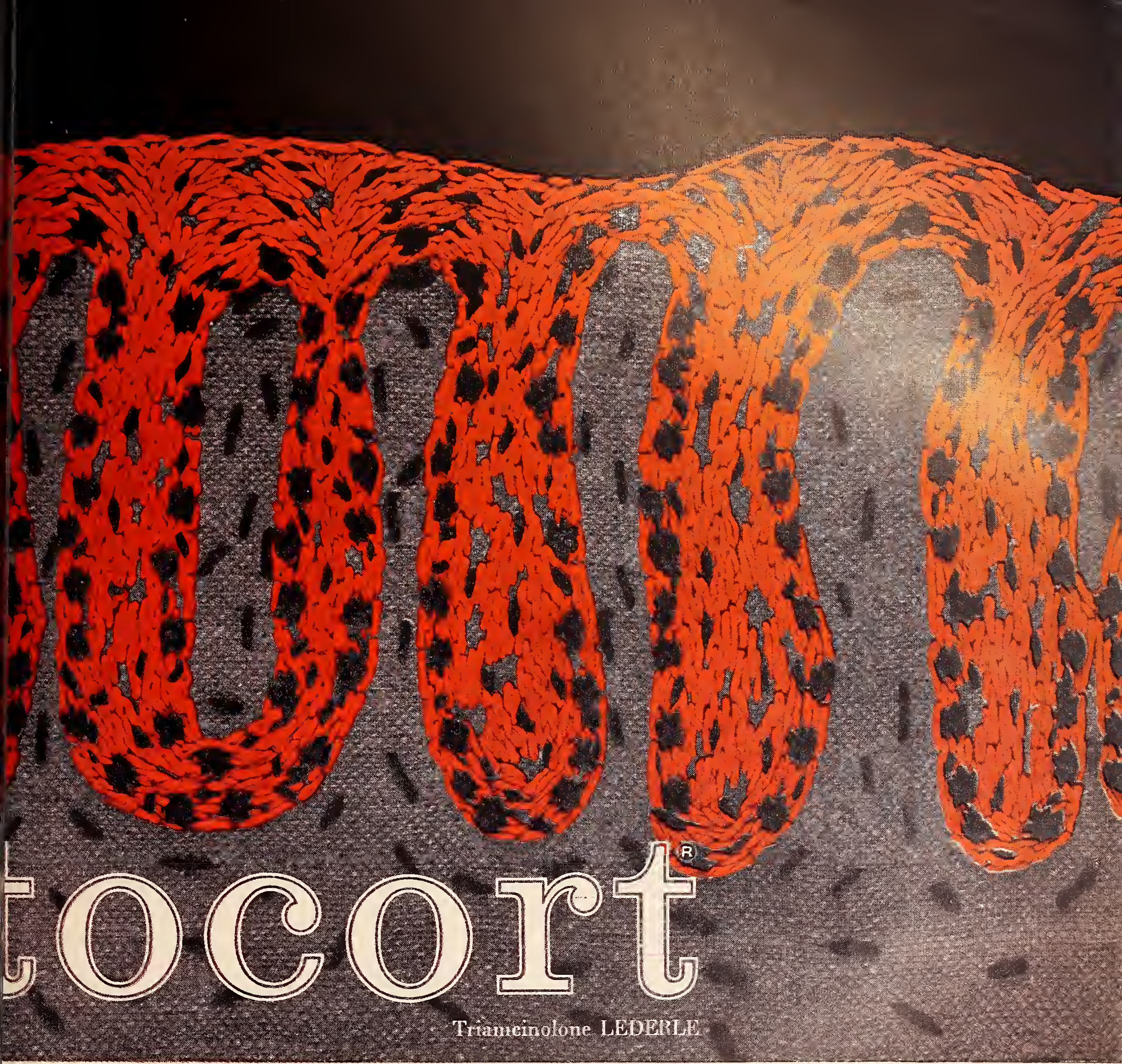


Substantiated by published reports of leading clinicians

• **effective control**
of allergic
and inflammatory
symptoms[1-3,7,8,12-15,17,18]



• **minimal disturbance**
of the patient's
chemical and psychic
balance[1,4-18]



At the recommended antiallergic and anti-inflammatory dosage levels, ARISTOCORT means:

- **freedom from salt and water retention**
- **virtual freedom from potassium depletion**
- **negligible calcium depletion**
- **euphoria and depression rare**
- **no voracious appetite — no excessive weight gain**
- **low incidence of peptic ulcer**
- **low incidence of osteoporosis with compression fracture**

Precautions: With ARISTOCORT all traditional precautions to corticosteroid therapy should be observed. Dosage should always be carefully adjusted to the smallest amount which will suppress symptoms.

After patients have been on steroids for prolonged periods, discontinuance must be carried out gradually over a period of as much as several weeks.

Supplied: 1 mg. scored tablets (yellow); 2 mg. scored tablets (pink); 4 mg. scored tablets (white); 16 mg. scored tablets (white).

Diacetate Parenteral (for intra-articular and intrasynovial injection). Vials of 5 cc. (25 mg./cc.).

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LEDERLE LABORATORIES, A Division of AMERICAN CYANAMID COMPANY, Pearl River, N. Y.

Autoimmune Hemolytic Anemias

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(With the technical assistance of Miss Teresa Cardenas, Biological Chemist.)

HEMOLYTIC ANEMIAS

THE hemolytic anemic group comprises a series of diseases which at the present time are still not very well known, and which open questions of transcendental resolution for the practice of medicine. From this viewpoint, the sub group of the hemolytic diseases by deviation of the immunologic mechanisms is the most interesting. The autoimmune hemolytic anemias are not infrequent. They are not so frequent either that a single investigator, in a short period of time, might derive from his own work conclusive statistical data.

The present paper is a preliminary report of my experience, and some speculations regarding the problems which are encountered in this group of illnesses.

The average life span of the red cell has been estimated as 110 days. A short life span discloses hemolytic mechanisms. These hemolyses stimulate the erythropoiesis that tend to compensate the excessive destruction of erythrocytes. If the erythropoiesis is not sufficient to compensate the hemolysis, the anemic syndrome appears.

Consequently, hyperhemolysis may go along without anemia, or anemia of varying degrees. The poverty of erythrocytes reveals the defecit of erythropoiesis against the hemolysis.

From these considerations I propose the name of hemolytic diseases as more accurate than the commonly known term of hemolytic anemia.

The HE are dependent on two mechanisms fundamentally: (1) Congenitally abnormal erythrocytes, and (2) because of humoral hemolytic systems. This first classification has been obtained from the knowledge of the life span of the transfused erythrocytes. Congenitally abnormal red cells have a short life span when transfused to a normal person; on the contrary, the erythrocytes from patients with humoral hemolytic mechanisms show a normal life span when transfused to a healthy recipient.

The humoral hemolytic mechanisms may be due to a toxicity eventually present in the blood stream, or to some biological agents (parasites, bacteria, or viruses), or to abnormal immunologic mechanisms in which the body becomes intolerant to its own cells, developing antibodies that shorten the life span of the cells. This abnormal immunology leads not only to the poverty of the red cells in the blood stream, but occasionally also to the low white and platelet count.

The present paper deals exclusively with the hemolytic diseases of the autoimmune type.

The fever, headache, nausea, abdominal or lumbar pain, hematuria, jaundice, and anemia are of varying degrees, depending on the amount of the erythrocytes destroyed and the suddeness of the hemolysis. This may happen to a person with a normal spleen, enlarged or small, and even in splenectomized patients in whom a second operation discloses small accessory spleens. The anatomical findings of the spleen are not specific in character.

The diagnostic criteria in recognizing the hemolytic disease is (1) increased indirect bilirubin in serum, (2) increased free hemoglobin in serum, (3) increased output of urobilinogin from urine and fecal matter, (4) anemia of varied degrees with increased reticulocyte count, (5) in the bone marrow, signs of stimulated erythropoiesis.

This sub-classification of the HD as autoimmune is established in the demonstration of (1) pan iso agglutinins, (2) autoagglutinins or autohemolysins, (3) in this case, increased hemoglobins in the plasma, in vitro. The auto-antibodies are classified as cold or warm according to the temperature in which they are more active

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Presented before the Medical Society of the United States and Mexico.

(4° C or 37-38° C.), (4) presence of protein fractions of antigenic nature that are coating red cells and rendering them agglutinable with an antihuman serum of Coombs, (5) agglutination of the erythrocyte previously sensitized with enzymes (pepsin, papain) reaction of Morton and Pickles. These AHD may appear as an accident without known antecedents in a healthy person, or as a complication of a previous disease (malignant disease, especially lymphomas, lupus erythematosis, infectious mononucleosis, etc.) In this way, two groups of patients are separated: the primary AHD and the secondary or symptomatic AHD.

The frequency of the secondary or symptomatic AHD is greater than the primary AHD. Discreet hemolysis is observed in more than 50 per cent of the patients with lymphoma. However, severe hemolytic crisis are presented in less than 20 per cent of the patients with lymphoma.

The symptomatic AHD are more frequent in the adult than in the child.

TREATMENT: Micheli (1911) has been accredited as the first to practice splenectomy as a treatment for the AHD. From 1911 to 1944, this had been the only valuable treatment for the AHD. Recently, we have been using ACTH and/or adrenal steroids. Therefore, the evaluation of treatment should be made starting from 1944. That is to say, from the time in which Coombs developed the antihuman serum to disclose the coating antibodies. This date is almost coincidental with the date in which we began to use ACTH and adrenal steroids.

In considering the summary taken from "Results of Splenectomy in Autoimmune Hemolytic Anemias" — Chartkow and Dacie(1), British Journal of Hematology, 1956, 2, 137. In it we can observe good results in 6 patients from 28 splenectomized. Good results are interpreted by no further hemolytic crisis after splenectomy within a period of observation from 8 months to 5½ years after the operation.

It has been impossible to predict the results of splenectomy. We are also unable to derive any conclusions as to the use of ACTH and/or steroids before the operation and the post-operative results.

When the role of the spleen is considered in the pathogenesis of the AHD, it's easy to understand the unpredictable results of splenectomy. It should be remembered that the spleen is only part of the reticulo-endothelial system where the antibodies are produced and according to the famous expression of Killiker (1849), the spleen is the cemetary of the erythrocytes. That is to say, the cellular destruction is "conditioned" outside of the spleen. Therefore, splenectomy should be considered only in patients with a minimum of surgical risk, and with sudden and severe hemolytic crisis. If the patient is not markedly improved, or cured with splenectomy, we should consider the use of ACTH and/or adrenal steroids.

The medication by itself is useful in 55% of the patients (Dameshek — The Autoimmune Hemolytic Anemia of Malign Lymphocytic Disease — Blood, March 1955). These statistics have been verified by many investigators as Jean Dausset — (Immuno Hematoglie, Biologique et Clinique, p. 271).

The therapy with prednisolone (which is often the choice drug) will be kept during the hemolytic episode at a dose varying from 40 to 70 mgs. daily. According to statistics of Osgood, the average survival after the crisis is from 1 to 2 years.

(Incidence and Treatment of Acquired Hemolytic Anemia Complicating Chronic Lymphocytic Leukemia; Sixth International Congress, International Society of Hematology, Boston, Sept. 1956)

To summarize our experience of the last four years with patients with AHD. Six patients, all of them adults, with ages varying between 38 and 56 years — four men and two women. Only one primary AHD of a chronic course, five symptomatic secondary AHD to a lymphoma, and of the acute course. The survival of the patients from the moment of the first hemolytic crisis has been of less than two weeks in two patients who died during the hemolytic crisis. One patient died 4 months later from a pulmonary complication. In one patient, we were unable to obtain information being that she left the hospital. Two of the patients are still alive and free from hemolytic crisis. Neither has been splenectomized. All have kept under treatment with Prednisolone.

COMMENTS: The prime character of the hemolytic diseases of the autoimmune type is an intolerance of the body against his own cells. This could be interpreted as a change in the prevalent conditions of the intra-uterine life, or perhaps (and this seems to be the more

probable), because the erythrocytes in a given moment change the antigenic structure in such a way that from this moment, they stimulate the production of auto-antibodies.

The antihuman serum of Coombs permits the recognition of a protein factor lately identified as a gamma globulin that coats the erythrocytes, and that is responsible for its agglutination.

Some exceptions have been reported of healthy people who give a positive Coombs reaction. However, these very infrequent cases which are difficult to explain, do not invalidate the practical use of the Coombs reaction.

Even after demonstration of the antigens coating the red cells, the hemolytic mechanism is not easy to explain. Undoubtedly, the mechanism of antibody production may be altered by multiple factors. The "prevalent conditions" during the uterine life that bring to existence the immunological conflicts within the same individual, have been altered. This alteration may be due without question to bacteria and viruses, and probably the neoplastic cells are also able to produce similar reactions. Bacteria, viruses, chemicals from exogenous origin, or protein factor derived from abnormal metabolisms of neoplastic cells may act as haptens, coating the red cells and stimulating antibody production. Or perhaps these factors, when coating the red cells, might harm them, rendering them more suceptible to hemolysis. Until now, it hasn't been possible to give an experimental explanation for this problem.

Research is intense — it continues indefatigably. The answer that discloses the truth in all its marvelous simplicity must soon be found.

"Anemias Hemoliticas Autoimmunes"

Jose Miguel Rizo Urzua, D.M.

Guadalajara, Jal., Mexico

Nov. 1958

(Con la colaboracion tecnica de la Srta. Teresa Cardenas Q. B.)

EL GROUPO de las anemias hemolíticas comprende una serie de padecimientos a la fecha imperfectamente conocidos que plantéa cuestiones de resolución transcendente para el ejercicio de la Medicina. Desde este punto de vista, el sub-grupo de las enfermedades hemolíticas por aberracion de los mechanismos inmunológicos o "autoinmunes," es el más interesante.

Las enfermedades hemolíticas autoinmunes, no son raras. Tampoco son tan frecuentes como para que un solo investigador, en un plazo corto, pueda derivar de su propio trabajo, datos estadísticos concluyentes.

El presente trabajo es un informe preliminar de mi experiencia y algunas consideraciones acerca de los problemas planteados por estos padecimientos.

El promedio de vida de los eritrocitos ha sido estimado en 120 días. Unpromedio de vida reducido, revels mecanismos de hiper-hemólisis. Esta hiper-hemólisis estimula mecanismos de eritropoiesis que tienden a compensar la excesiva destrucción eritrocítica. Si la eritropoiesis es insuficiente para reponer los eritrocitos hemolizados, se aprecia el síndrome anémico.

En consecuencia, los mecanismos de hiperhemólisis pueden cursar sin anemia apreciable o con anemia de intensidad variable. La anemia expresa la desproporción entre la eritropoiesis y la eritrocateresis.

Si el rasgo común en este grupo de padecimientos es la hiperhemólisis y no la anemia, la denominación más adecuada es la de ENFERMEDAD HEMOLITICA y no la de anemia hemolítica, generalmente empleada.

Las enfermedades hemolíticas (EH) obedecen a dos mecanismos fundamentales dependientes de 1) defectos constitucionales de los eritrocitos o factores corpusculares y 2) las ocasionadas por sistemas hemolíticos extracorpusculares o humorales. Ssta primera clasificación se ha derivado del conocimiento de la sobre-vida de los eritrocitos transfundidos. Los eritrocitos constitcuionalmente defectuosos y anormalmente frágiles tienen una sobrevida corta si son transfundidos a una persona sana; por el contrario, los eritrocitos de los enfermos con padecimientos hemolíticos humorales, tienen una sobrevida normal, si son transfundidos a personas sans.

Los mecanismos de hiperhemílisis extracorpusculares pueden obedecer a la acción de tíxicos eventualmente presentes en el torrente circulatorio o a la acción de agentes biológicos (parásitos, bacterias o virus), o bien, a mecanismos inmunológicos anormales en los cuales el organismo se vuelve intolerante para sus propias células frente a las cuales reacciona produciendo anticuerpos que acortan notablemente su promedio de vida. Estos anormales mecanismos de inmunidad conducen no únicamente a la pobreza de eritrocitos en la sangre periférica, sino, tabién, frecuentemente a la leucopenias y trombocitopenias "autoinmunes."

LA PRESENTE EXPOSICION SE LIMITA A LAS ENFERMEDADS HEMOLITICAS DE CARACTER INMUNOLOGICO O "AUTOINMUNES."

La fiebre, cefálea, nausea, dolor epigástrico o lumbar, hematuria, ictericia y anemia, son de grado variable, dependiendo de la magnitud y brusquedad de la hemólisis. La hemólisis puede apreciarse en enfermos con bazo de tamaño normal, grande o pequeño y aun en enfermos esplenectomizados en los cuales una segunda intervención permite descubrir pequeños bazos supernumerarios.

La imágen histológica del bazo NO tiene caracteres específicos. El criterio de diagnóstico que permite reconocer enfermedades hemolíticas, fundamentalmente es: el apreciar 1) aumento de la eliminación en 24 horas del urobilinógeno fecal y urinario 4) anemia de grados variables con aumento de la cifra de reticulocitos 5) en la médula hematopoiética, signos de estímulo eritropoiético.

La subclasificación del padecimiento como "autoinmune" se establece al demostar: 1) pan iso-aglutininas 2) autoaglutininas o auto hemolisinas 3) estas ñltimas, por aumento de la hemoglobina libre en plasma. Se subclasifican los autoanticuerpos como fríos o calientes de acuerdo con la temperatura a la cual desarrollan su mayor actividad (4°C o 37-38°C) 4) presencia de fracciones proteicas antigénicas que recubren a los eritrocitos, volviéndolos aglutinables mediante el suero antihumano de Coombs. 5) aglutinación de los eritrocitos previamente tratados con enzimas (pepsina, papaina); reacción de Morton y Packles.

Estas EHA puenden presentarse como un accidente sin causa aparente, en una persona sana o bien, como una complicación de un padecimiento neoplásico maligno (especialmente linfomas), lupus eritematosos, mononucleosis infecciosa, etc. Desde este punto de vista, quedan distinguidos dos groupos de enfermos, los que no tienen algñn antecedente que explique la EHA (primarias) y los que padecen la EHA como complicación de otro (EHA secundarias o sintomáticas).

La incidencia de las EHA secundarias es mucho mayor que las primarias. Discretas manifestaciones de hemólisis se aprecian en más de un 60% de los enfermos con linfoma. Sin embargo, crísis hemolíticas severas se presentan en menos del 20% de los enfermos con linfoma sin que a este respecto yo haya encontrado estadísticas precisas.

Las EHA secundarias en los linfomas son de una incidencia mucho mayor en el adulto que en el niño, como puede apreciar en esta gráfica obtenida de: Autoinmune hemolytica anemia, Crosby and Rappaport Blood Jan. 1957).

TRATAMIENTO:

Micheli (1911) ha sido acreditado como el primero en practicar la esplenectomía como tratamiento para la EHA. Desde esta fecha había sido el único recurso terapéutico de utilidad hasta fecha reciente en que se emplean el ACTH y/o los esteroides suprarrenales. En realidad, la evaluación del tratamiento debe hacerse a partir de 1944 a la fecha, es decir, desde que el diagnóstico de los anticuerpos bloqueadores ha sido posible gracias al suero antihumano de Coombs. Casi coincide esta fecha con el empleo de los esteroides suprarrenales y el ACTH.

Yo no he podido encontrar series sufientemente grandes en las cuales poder evaluar el estado actual del problema esplenectomía vs. tratamiento hormonal. Por la seriedad del autor, esta es una de las series más de tomarse en cuenta. (Results of splenectomy in autoinmune hemolytic anemias. — Chertkow and Dacie.

Brit. J. of Hemat. — 1956, 2, 237). En ella se puede apreciar buen resultado de la esplenectomía en 6 casos de un total de 28 enfermos sometidos a la intervención; buen resultado expresa NO repetición de las crísis hemolíticas y en estas series, esta observación ha comprendido lapsos que van de 8 meses a 51/2 años. No ha sido posible encontar algún procedimiento para poder anticipar los resultados de la esplenectomía. Tampoco hay alguna correlación entre los resultados obtenidos con el empledo de la ACTH y/o corticoides antes de la intervención y los resultados post-esplenectomía.

Cuando se considera el papel del bazo en la producción de la EHA se pueden comprender los resultados inciertos de la esplenectomía. Recuérdese que el bazo es únicamente un eslabón de la cadena retículo-endotelial, productora de anticuepos y según la célebre expesión de Kolliker (1849), el bazo es el cementerio de los eritrocitos; es decir, es decir, la destrucción celular ha sido "condicionada" fuera del bazo. Por estas consideraciones, me parece que es de discutirse la utilidad de la esplenectomía en los casos en los cuales el riesgo quirúrgico sea mínimo y la crísis hemolítica muy severa. Si en estas condiciones la esplenectomía no conduce a la mejoría que con ella se busca, el enfermo será tratado con ACTH y/o corticosteroides. Este tratamiento médico es útil en el 55% de los enfermos. (Dameshek. The auto immune hemolytic anemia of malignan lymphocytic disease Blood March 1955), dato que ha sido corrobarado según se aprecia en el cuadro tomado de Jean Dausset — (Inmmuno hematologie, biologique et clinique, p. 271)

La terapéutica con prednisolona (que se muchas veces el agente de elección), se mantedrá durante la duración de la crísis hemolítica, a una dósis que varía de 40 a 70 mg. diario.

De acuerdo con las estadísticas de Osgood, el promedio de sobrevida después de la aparación de la crísis de EHA secundaria a un linfoma, es de 1 a 2 años. (Indidence and treatment of acquired hemolytic anemia complicating chronic lymphocytic leuqemia; Sixth International Congress, International Society of Hematology, Boston, Sept. 1956.)

El siguiente cuadro sumariza mi experiencia de los últimos cuatro añns con enfermos de EHA. Seís enfermos de los cuales todos son adultos, con edades comprendidas entre los 38 y 56 años, 4 hombres y dos mujeres. Solamente una EHA primaria y de curso crónico; 5 secundarias a linfomas y de curso agudo. La sobrevida de los enfermos a partir de la aparición de la EHA ha sido de dos semanas en dos enfermos que fallecieron durante la crísis hemolítica, un enfermo fallcció cuatro meses después de una complicación pulmonar, en un enfermo no fué posible obtener información y dos enfermos han tenido una sobrevida de más de un año, estando a la fecha libres de la crísis hemolítica.

DISCUSION:

El carácter fundamental de los padecimientos hemolíticos autoinmunes radica en que el enfermo se muestra intolerante frente a sus propios eritrocitos. Esto pudiera interpretarse como un cambio de las "condiciones" prevalentes durante el desarrollo intrauterino o bien, — y esto parece ser lo más probable—, debido a que los eritrocitos en un momento dado han modificado su estructura antigénica, de tal modo que desde ese momento despiertan la formación de autohemolisinas.

El suero antihumano de Coombs permite reconocer la presencia de un factor protéico, posteriormente caracterizado como gamaglobulina y que recubre los eritrocitos, permitiendo así su aglutinación.

Se ha informado de algunas rarísimas excepiones de personas sin padecimientos hemolíticos que dan una reacción de Coombs positiva, sin embargo, estas extraordinarias excepciones, si bien muy difíciles de interpretar, no le restan valor préctico a la reacción de Coombs.

Aún demostrando la presencia de antígenos en la superficie de los eritrocitos, el mecanismo de la hemólisis no es de explicación fácil. Indudablemente, el mecanismo de producción de anticuerpos puede ser alterado por múltiples factores. Las "condiciones prevalentes" durante la uterina que hacen inexistentes conflictos inmunológicos dentro del mismo individuo, han sido alteradas. Esta alteración puede ser provacada por bacterias y virus, fuera de duda, como se ha apreciado tantas veces, sobre todo en los enfermos convalescientes de neumonias a virus y muy probablemente las células neoplásicas sean también capaces de producir alteraciones semejantes. Bacterias, virus, productos químicos exógenos o proteínas derivadas de metabolismos desviados de las células malignas, pueden actuar como haptenos, recubriendo los eritrocitos y despertando respuestas antigénicas de autohemolisinas. O tal vez, estos factores, al absorberse por la superficie de los eritrocitos, los lesiones, haciéndolos más fácilmente hemolizables. Hasta la fecha no ha sido posible ofrecer la demostración experimental que aclare el problema.

La investigación es intensa, cont:nua, infatigable. La respuesta que revela la verdad en toda su maravillosa sencillez, no ha de tardar.

Hypogonadal Impotence In Middle-aged Men

Treatment with Fortified Chorionic Gonadotropin*

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IN MY typical office practice, the most common complaints encountered in men past forty have been sexual impotence and symptoms of the male climacteric. The latter include loss of self-confidence, nervousness, anxiety, worry, depression, hot flashes, insomnia, and emotional outbursts. Many of these patients resort to tranquilizers or barbiturates in a vain attempt to secure temporary relief.

The symptoms of the male climacteric are, of course, similar to those of the psychoneuroses resulting from emotional stress in persons of all ages. However, they are more directly associated with the aging process and aggravated during the male climacteric.

There is another important difference: In younger psychoneurotics, the symptoms may disappear so as to leave a long interval of normal behavior. In the male climacteric, on the contrary, the nervous symptoms grow more and more severe, so as to establish a vicious circle.

The object of therapy is to provide simultaneous relief of the impotence and climacteric symptoms. In my rather extensive experience in this field, best results have been obtained on a course of treatment with fortified chorionic gonadotropin*.

The composition of Glukor fortified chorionic gonadotropin per each cc. is chorionic gonadotropin 200 i.u., thimaine hydrochloride 25 mg., L (+) glutamic acid 52.5 ppm., chlorobutanol 0.5% and procaine hydrochloride 1%. It is administered intramuscularly in a dosage of 1 cc. twice weekly for a period of about four weeks, after which injections are given once a week for maintenance. Eventually one injection per month will suffice.

CLASSIFICIATION OF IMPOTENCE

Symptomologically, impotence may be classified into four forms:

(1) *Impotentia erigendi,* or inability to have an erection of the penis, although libido is present. Absence or deficiency or erection is the most common type of impotence(1). In many cases erections still occur but are too flabby to permit intromission of the penis into the vagina or fade away during unsuccessful attempts at intercourse.

(2) *Impotentia coeundi,* or inability to complete the act of ejaculation satisfactorily. This should be distinguished from permature ejaculation, a condition which actually is due in many cases to the wife's frigidity, in that she reaches her climax only after a prolonged period of sexual stimulation or in some cases not at all(2).

(3) *Impotentia generandi,* or inability to reproduce in spite of normal intercourse. This fault is due to defective spermatogenesis or a specific incompatibility between the seminal fluid and the vaginal secretion.

(4) *Absence of libido.* This condition may result normally from preoccupation with intellectual work, in which case it is temporary; it may be deep-rooted in Freudian psychology,

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*The product used in this clinical investigation was Glukor multiple dose vials, supplied by Research Supplies, of Albany, N. Y.

such as a manifestation of homosexuality or narcissism; or it may be a definite manifestation of hypogonadism, either primary in younger subjects or associated with the male climacteric in older patients.

Etiologically, there are three grand divisions of impotence:

(1) *Psychogenic impotence,* resulting from inhibitory influences upon the cerebral cortex. The most common psychological causes include ideas of guilt or remorse, a sense of shame or disgust, Oedipus complex, puritanical upbringing, fear of causing pregnancy or of being discovered in the act, or a repressed juvenile libidinous fixation upon another type of woman. Psychological impotence is most common in younger men, as in the early days of married life.

(2) *Hypogonadal impotence,* resulting from a deficient secretion of androgen by the Leydig's cells in the interstitial tissues of the testicles. This form is most common in middle-aged and elderly men and is often associated with the male climacteric.

(3) *Mixed hypogonadal and psychogenic impotence.* In this type the gradual but partial loss of sexual power due to hypogonadism results in a deep sense of inferiority. A psychoneurotic overlay may produce complete impotence, until appropriate therapy enables the patient to have satisfactory intercourse and thereby restores his self-confidence.

RATIONALE OF GONADAL STIMULATION

Two types of endocrine therapy are generally recognized in the treatment of hypogonadal impotence:

(1) *Replacement therapy* with testosterone or one of its derivatives, such as the propionate, cyclopentylpropionate, enanthate, or methyltestosterone.

(2) *Gonadal stimulation* with chorionic gonadotropin.

Replacement therapy with testosterone is beneficial only as long as it is continued(3). In fact, testosterone may be detrimental and induce temporary sterility by inhibiting the normal secretion of pituitary gonadotropins(4). Finally, psychogenic or neurogenic impotence is seldom benefited by testosterone treatment(5).

My own experience, as reported in this paper, indicates that more effective and lasting results in the treatment of hypogonadal impotence are obtained with fortified chorionic gonadotropin than with any of the various forms of testosterone.

Chorionic gonadotropin is the water-soluble gonadotropic substance obtained from the urine of pregnant women by selective precipitation and fractionation procedures(6). It is of human placental origin.

It has been proved definitely that chorionic gonadotropin acts on the interstitial cells of the testicles (Leydig's cells), which furnish the male sexual internal secretion. It causes these cells to elaborate the androgenic hormone, which in turn induces growth of the accessory sex organs(7). Chorionic gonadotropin is effective in male monkeys and human beings.

By providing potent stimulation of the interstitial endocrine cells of the testicles, chorionic gonadotropin is valuable in the treatment of sexual infantilism with defective sperm formation(8).

Chorionic gonadotropin acts directly on the gonads without the intermediation of the pituitary gland(9). Its effects are similar to those of pituitary ICSH (interstitial cell stimulating hormone), since both stimulate the interstitial cells of the testicles to secrete the androgenic hormone(10).

In hypogonadotropic eunuchoidism, chorionic gonadotropin is the preparation of choice to stimulate interstitial cell activity(11).

In middle-aged men hypogonadal impotence is usually associated with symptoms of the male climacteric. This syndrome(12) is characterized by nocturia, fatigability, moodiness, irritability, impaired mental concentration, indecision, hot flashes, decreased libido, and a fear of impending impotence. Other symptoms include dizzy spells, headaches, excessive perspiration, numbness, tingling, tachycardia, weakness, and a feeling of inadequacy in undertaking new assignments.

It has been my experience that many patients come to the office complaining of the male climacteric symptoms and that the direct evidence of declining virility is elicited only by pointed interrogation.

To provide relief of the climacteric symptoms concurrently with correction of the hypogonadism, two fortifying agents have been added to chorionic gonadotropin; namely, glutamic acid and thiamine hydrochloride in therapeutic proportions.

Glutamic acid improves mental and physical alertness and the L-form appears to be the sole therapeutic agent(13). Evidence of its mental stimulation is provided by the fact that L-glutamic acid restores consciousness to schizophrenic patients in hypoglycemic coma following insulin injections(14).

In addition to its specificity for beriberi, thiamine hydrochloride corrects other prominent deficiency symptoms manifested by the nervous system. The latter include irritability, various psychic or emotional disturbances, abnormal fatigability, and neurasthenic symptoms(15). It will be noted that these complaints are often observed in the male climacteric.

On a practical as well as a theoretical basis, I have found that fortified chorionic gonadotropin injections provide superior and lasting benefit in the treatment of hypogonadal impotence associated with the distressing symptoms of the male climacteric.

CLINICAL TRIAL

Injections of fortified chorionic gonadotropin were employed as the only medication in a series of 82 cases of hypogonadal impotence. Results were compared with negative findings following use of a placebo by the standard double blind technique.

The ages ranged from 37 to 74 years, with the majority around 45 to 50. Most of the patients were under treatment for disturbances of sexual potency, undue emotional tension and fatigue, the male climacteric, and senile manifestations.

Previous treatment with other medications including testosterone had produced only fair or negative results. Testosterone had been given to 72% of the patients over a period of thirty months with little or no benefit.

After a series of intramuscular injections of 1 cc. fortified chorionic gonadotropin, twice a week, all of the patients showed improvement. Sexual potency returned in most cases, general tensions eased off, and depression and fatigability decreased. The patients became less irritable, slept better, and had more energy and self-confidence.

Improvement was noted within three weeks in 72% of the cases; within four weeks, in 81%.

After four weeks a control experiment was instituted. The treatment was continued in 41 cases and discontinued in the other 41.

The patients who continued treatment maintained their improvement throughout the full course of therapy.

Of the 41 control patients whose injections were terminated, 32 (78%) returned after two to three weeks complaining of their original symptoms. The other 9 (22%) reported similar loss of vigor and return of nervous symptoms at the end of four weeks. Injections of fortified chorionic gonadotropin were resumed in these cases, with the result that potency was again restored and the symptoms were relieved.

CASE HISTORIES

The following three case histories are representative of the results obtained in this group of patients.

Case No. 1. A. B., male, age 69, complained of impotence, insomnia, dyspnea, gastric pain and hypertension. His blood pressure was 185 mm. Hg. systolic, 120 diastolic, pulse 108. He was able to sleep only three hours a night. Physical examination disclosed a facial paralysis of the peripheral nerve type.

Treatment with testosterone, tranquilizers and other medications gave no benefit.

After two months of treatment with fortified chorionic gonadotropic injections, 1 cc. twice weekly, the patient showed remarkable improvement. Impotence was relieved, he slept soundly, felt no pain, and was less tense than he had been in years. His blood pressure was reduced to 158/98, pulse 88.

The treatment was continued in courses with intervals for a period of three years. At the age of 72 the patient is physically and sexually active and his anxieties about himself and his condition have disappeared. He looks and feels like a man much younger than his years.

Case No. 2. L. B., a minister, age 74, was in excellent physical condition except for sexual impotence, chronic prostatitis and hypertension. His systolic blood pressure was 196 mm. Hg., diastolic 110, pulse 98.

After a course of treatment with fortified chorionic gonadotropin, his impotence was relieved, he walked erect and drove a car, blood pressure was reduced to 156/94, and the pulse rate dropped to 80. Treatment was maintained with two or more injections per month.

The symptoms returned whenever the patient stayed away for a prolonged period of time, but he always responded promptly to readministration of fortified chorionic gonadotropin.

Case No. 3. J. K., male, age 45, a salesman, three children, complained of a very disturbing and depressing sexual impotency. Associated symptoms were primarily emotional tension, fatigue, listlessness, paroxysmal bouts of dizziness and faintness, and persistent insomnia.

On physical examination he was found to have a low blood pressure of 104 mm. Hg. systolic, 62 diastolic, pulse 78. Blood counts, urinalysis, chest x-ray and EKG were all negative. Examination of the semen revealed oligospermia.

Previous therapy included testosterone, thyroid, strychnine preparations and amphetamines, all of which produced only slight symptomatic relief.

Fortified chorionic gonadotropin 1 cc. was injected intramuscularly twice weekly for three weeks. At the end of that time the patient stated that he had made a remarkable recovery. Impotency was completely relieved, vigor and stamina had returned, blood pressure was raised to 118/78, sleep was normal, dizziness had disappeared, and the spermatozoon count showed normal findings. After four weeks of biweekly injections, he was maintained on one injection per week with the same good results.

SUMMARY AND CONCLUSIONS

1. Impotence may be classified etiologically into the psychogenic, hypogonadal and mixed categories.

2. Symptomologically, impotence may be classified as impotentia erigendi, impotentia coeundi, impotentia generandi, and loss of libido.

3. Replacement therapy with testosterone and its derivatives has given only fair or negative results.

4. Gonadal stimulation with fortified chorionic gonadotropin provides the most satisfactory treatment for hypogonadal impotence.

5. A clinical trial with injections of fortified chorionic gonadotropin 1 cc. twice weekly provided superior and lasting benefits.

6. Fortified chorionic gonadotropin therapy not only restored sexual capacity but also relieved the male climacteric.

7. The therapeutic benefits persisted as long as the therapy was continued, disappeared several weeks after the injections were discontinued, and returned with resumption of treatment.

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CLOSED TREATMENT OF HERNIATED-INTERVERTEBRAL LUMBAR DISCS by Darius Flinchum, M.D.

Flexion rest, symptomatic analgesics, muscle relaxants, traction, manipulation under general anesthesia, plaster flexion corset for 6 weeks, and flexion exercise and stress have given relief to many suffering from back and leg pain due to herniated intervertebral lumbar discs. No improvement may be anticipated with this conservative method, if the disc is completely ruptured out free in the spinal canal or if it is an old settled disc. (Condensed from *Journal Medical Association Georgia,* 48:461, 1959)

Diagnosis and Treatment of Diseases of the Parathyroid Glands

PART II

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PARATHYROID HORMONE

THIS hormone is probably a protein according to current evidence. Two components to the hormone have been found, one with a molecular weight of 15,000 to 25,000, the other with a molecular weight of 500,000 to 1,000,000. It is fairly stable in slightly acid media, but is best preserved as a dry powder(160). Thus far, it has not been isolated in pure form.

Parathormone is measured in units. One unit is equal to 1/100 of the amount necessary to raise the serum calcium of 100 cc. of serum of normal dogs weighing 20 kilograms, by 5 milligrams within 15 hours after subcutaneous injection. While parathormone injections may be of therapeutic aid for short periods, tolerance develops with continued use so that its long term value is limited(98).

A major function of the parathyroid hormone is to cause a decrease in the renal reabsorption of phosphorus(35, 81). In addition, it increases the urinary excretion of both calcium and phosphorus. Although parathormone is thought to inhibit the renal tubular reabsorption of phosphate, its exact physiologic action is still obscure(73, 125). It also exerts an action on bone, presumably by stimulating proliferation of osteoclasts of the bone barrow with an ensuing increased erosion of bone trabecules, with resultant decalcification(159). It would appear then that there are two or more types of parathyroid hormones according to available evidence. The two primary hormones are considered to be the calcium mobilizing substanee which causes bone changes, hypercalcemia, increased urinary excretion of calcium, and also the phosphaturic substance which is capable of decreasing renal tubular reabsorption of phosphate, increasing urinary excretion, and lowering the serum phosphorus(77, 124). Studies by Munson would indicate that the two mechanisms of action of parathormone are independent of each other(124). The foregoing was further brought out by the administration of parathyroid extract (Lilly) to normal subjects with a definite rise in serum calcium but without a phosphate diuresis. This observation is of double importance since it shows that the hypercalcemia induced by parathyroid extract need not be mediated by phosphate diuresis(45). It has been well shown, too, that certain parathyroid hormone extracts may be inactive with regard to effect on serum calcium yet have an effective phosphate diuresis effect(100, 165).

The mechanism of action by which parathormone induced phosphaturia is produced is still not clear(159). While a decrease in tubular reabsorption of phosphate is thought to be responsible, other studies have shown that phosphaturia in a given instance may be due to increased glomerular filtration of phosphate. Hiatt and Thompson have shown that the intravenous administration of parathyroid extract results in a phosphate diuresis. This effect, in normal persons, can be accounted for by a rise in filtered phosphate secondary to a rise in glomerular filtration rate. In hypoparathyroid patients there is a decreased tubular reabsorption of phosphate as well as an increase in glomerular filtration of phosphate(90). Thus, more must be involved than the renal tubular mechanism.

The interrelationship of parathormone and other endocrine glands is of interest. The influence of the pituitary upon the parathyroid glands remains undecided. Albright and Reifenstein state there is no evidence of hypoparathyroidism in hypopituitarism which would suggest that parathormone output is not under pituitary control. Other data are available which suggest that there might be an indirect relationship between the two glands(42, 93, 148, 157).

Adrenal cortical hormones will lower the level of serum calcium, presumably by increasing calcium loss in the stool(131, 161). In this regard, there is conflicting experimental and clinical evidence. Experimental adrenalectomy will relieve the tetany of hypoparathyroidism(169). The foregoing would suggest that adrenocortical insufficiency would improve hypoparathyroidism; however, this has not been shown clinically. On the other hand, the administration of cortisone may make previously well controlled hypoparathyroidism unmanageable with regard to hypocalcemic tetany with return to a normal state following cessation of cortisone administration(123, 131). In support of the experimental data is a case of idiopathic hypoparathyroidism which was improved with the onset of adrenal insufficiency(107).

PARATHYROID PATHOLOGY

There are scattered reports in the literature of very little, if any, change in cytology of the parathyroid glands in the presence of clinically obvious hyperfunction of the gland(174).

From the foregoing paragraph, it is clear that the associated clinical picture is of extreme importance in the histologic diagnosis of parathyroid disease. However, one should be able to make a clear-cut microscopic diagnosis in the majority of cases.

The terminology of parathyroid histology and cytology is extremely confusing because there is no unanimity of opinion with regard to the nomenclature and number of cell types(98). Castleman and Mallory in 1935 felt that "the nomenclature of the types of parathyroid cells was regrettably confused" and attempted to establish a descriptive base line by a thorough description of the normal gland(43). In spite of their monumental paper, a veil of mystery is still apparent when one tries to decode the current material on this subject.

Castleman and Mallory originally described four types of cells and realized, even then, that there were probably numerous transitional forms.

The chief cell (principal cell) is polyhedral in shape, poorly outlined, and measures 6 to 8 microns in diameter. Its nucleus is large, round, sharply demarcated by a basophilic outline, comprises more than half of the cell volume, and measures 4 to 5 microns in diameter. The chromatin is usually abundant and may give the nucleus a pyknotic appearance. The cytoplasm is usually quite scant and faintly acidophilic. The cytoplasm may be retracted toward the cell margins, leaving an unstained halo of varying width about the nucleus, and this is often spoken of as vacuolization.

When the cytoplasm is apparently entirely absent (complete vaculization) the cell is called a "water-clear" or "wasserhelle" cell. At this stage the cell is sharply outlined and is larger than the chief cell, measuring 10 to 15 microns in diameter. Its nucleus is about the same size as that of the chief cell, but is usually more hyperchromatic, more often pyknotic, and eccentrically located. These cells are seen only occasionally in the apparently normal gland and then only in small groups.

The oxyphil cell, as originally described by Castleman and Mallory, may be subdivided into a pale and a dark form.

The pale oxyphil cell is polyhedral in shape, has a well demarcated cell margin and measures 11 to 14 microns in diameter. The nucleus is about the same size as that of the chief cell but is not as hyperchromatic. The cytoplasm is reddish pink, finely granular, and completely fills the cell. There is no vacuolization.

The dark oxyphil cell is larger than the chief cell but smaller than the pale oxyphil and measures 8 to 10 microns in diameter. Its cell border is not sharp. The nucleus is small, 3 to 4 microns, and intensely pyknotic. The cytoplasm is dark red and homogeneous.

The distribution of parathyroid cells varies with the age of the individual. Up to the time of puberty the glands are composed almost completely of chief cells. After puberty large fat cells appear in the stroma and increase in number until about 40 years of age. The fat tissue remains fairly constant during middle age and does not increase with old age.

At time of puberty or shortly thereafter pale oxyphils gradually appear and they increase in number with increasing age. After 40 to 50 years of age they form large islands. Dark oxyphil cells, too, occur after puberty.

The wasserhelle cell does not occur before puberty. In cases of hyperplasia secondary to renal disease, the whole gland may be composed of these cells.

In 1952 Castleman wrote that the chief cell was the only cell type and that the other cell types represent variations in the life cycle of the chief cell. He considers the oxyphil cell an involuted non-functioning variant of the chief cell, and the wasserhelle cell a chief cell with a hypervacuolated cytoplasm on the basis of hyperfunction(98, 41).

Three pathologic entities have been found in the parathyroid glands of patients with primary hyperparathyroidism(181): (1) single or multiple adenomas, (2) hypertrophy and hyperplasia of all the parathyroid tissue, and (3) carcinoma of one of the four glands.

SINGLE OR MULTIPLE ADENOMAS

Single or multiple adenomas are the cause of about 90% of cases of primary hyperparathyroidism(181). They are usually a darker brown than the normal parathyroid due to an absence of stromal fat which gives a yellowish color to the gland. If an edge of normal parathyroid tissue is seen on section of an adenoma, the possibility of hyperplasia is excluded since hyperplasia doesn't involve one part of a gland and leave the remainder normal(184). The parathyroid adenoma may exhibit a single cell type; however, a mixture of cell types is not infrequent. The most common type of adenoma is composed of either chief or transitional wasserhelle cells while adenomas of non-transitional wasserhelle cells are somewhat rare(44, 98, 184). The oxyphilic type of parathyroid adenoma is also rare and is probably the least common variety(127). Some adenomas may exhibit marked cytologic irregularities with many giant cells(43, 184). Occasionally the glandular type of parathyroid adenoma may bear some resemblance to a fetal adenoma of the thyroid. Hurthle cell adenomas of the thyroid may be confused with the oxyphilic type of parathyroid adenoma if the parathyroid has an intrathyroid location(184).

PRIMARY HYPERTROPHY AND HYPERPLASIA

Generalized hyperplasia differs sharply from secondary hyperplasia of the parathyroids due to chronic renal disease in that it is a "primary disease" as is an adenoma(11). The first recognition of this disorder occurred in 1934(6). In this condition, the only cell found is the wasserhelle cell with basally oriented nuclei arranged in an alveolar or acinar pattern. The cells resemble normal wasserhelle cells; however, they are much larger, varying in size from 10 to 40 microns. Grossly all four parathyroids are involved and the glands are 30 to 100 times the size of normal glands(181).

SECONDARY HYPERPLASIA

Secondary hyperplasia of the parathyroids occurs as a result of long standing renal insufficiency. The glands tend to be smaller in secondary hyperplasia and the cells are also smaller(181, 184). Rarely, the glands in secondary hyperplasia will be larger than those expected in the primary form of hyperplasia(98). The microscopic features of major importance is the chief cell as opposed to the large wasserhelle cell of primary hyperplasia. There is usually a mixture of cell types, and oxyphils are usually present in larger numbers than in the normal gland. Small wasserhelle cells may occur uncommonly in cases of secondary hyperplasia and these transitional types of wasserhelle cells are present in small numbers(184).

PARATHYROID CARCINOMA

This subject is discussed in another section of this paper under the general heading of parathyroid carcinoma.

THE SURGICAL APPROACH TO HYPERPARATHYROIDISM

Once the diagnosis of this disorder is made on sound clinical grounds, the only rational therapy is surgical removal of the hyperfunctioning parathyroid tissue(15, 16, 24, 32, 154). Other methods of therapy have been attempted but they have been discarded(84, 119). It is rare to be able to localize the site of a parathyroid adenoma before operation, thus, the surgeon must depend upon a meticulous exploration. The majority of parathyroid tumors are neither visible nor palpable although a few have been demonstrated radiographically by deformity of the barium filled esophagus(135). A palpable mass in the neck of a person thought to have hyperparathyroidism is rarely a parathyroid adenoma and usually turns out to be a thyroid nodule (Albright's Law)(32, 69). In line with these observations is the series of cases reported by Churchill and Cope in which only two of thirty parathyroid adenomata were palpable before operation(47).

The discovery of a parathyroid adenoma and its removal may be an easy or extremely difficult task depending on the size and the location of the lesion. One factor which should be kept in mind is that most operators have little or no personal experience with parathyroid surgery although they may be highly trained surgeons with considerable experience in thyroid surgery(87). This factor of almost unavoidable surgical inexperience is most likely one of the major causes of false negative explorations.

It has been stated that a normal parathyroid gland is easily recognizable grossly(24). However, some surgeons would cast doubt upon this statement(114). The normal gland is as a rule yellowish-brown and has a well defined but delicate capsule. The form of the glands is variable. The average weight of a single gland is between 30 and 40 mg. Preoperative chemical findings may give some clue as to the possible size of an adenoma since it has been said that the elevation of the serum calcium, and consequently the degree of depression of the serum phosphorous, is roughly proportional to the size of the tumor except in very large adenomas where the proportionality is less(43). The expected correlation of serum calcium elevation and adenoma size was not apparent in the series reported by Rienhoff(142).

In the performance of a cervical exploration in search of the cause of hyperparathyroidism the surgeon must be cognizant of several important possibilities which should be enumerated. A single adenoma (80% of cases) may vary greatly in size and may occupy any position from the neck to the mediastinum. An adenoma may be within the substance of the thyroid gland (2 to 3% of cases)(25), or may occupy an intrathymic position(33). The possibility of primary hyperplasia must be kept in mind since there is a specific surgical treatment for this condition. The most frequent cause of an unsuccessful surgical attempt for the cure of hyperparathyroidism in Hellstrom's experience lay in the presence of primary hyperplasia(87). More than one adenoma occurs in roughly 10% of cases; thus identification of a single adenoma should not halt an operative procedure until all glands are identified(24). Lastly, though, they are relatively rare (1 to 2%), one must be alert to the possibility of parathyroid carcinoma. Since the histological criteria of parathyroid carcinoma are of little help, the surgeon must detect gross invasion of surrounding structures before embarking on a more radical operative procedure(98).

The operative plan should be a primary search of the cervical region and, secondarily, the mediastinum. The operative field must be dissected in meticulous fashion and care should be taken to keep the area as bloodless as possible, since a small amount of blood will obscure the morphology of the parathyroids(142). All secondary operations for hyperparathyroidism are unsatisfactory because hemorrhage and scarring so obscure the parathyroid tissue that identification of each gland becomes virtually impossible. The responsibility for curing this potentially fatal disease rests largely with the surgeon who performs the first operation(24). The neck may be entered via a curved collar incision as is used in thyroid surgery. Upper and lower skin flaps are developed and the strap muscles divided. Since both sides of the neck are to be explored, it makes no difference which lobe of the thyroid is mobilized first(24). The superior parathyroid glands, which have less positional variability, may be inspected first and at this time one should be able to discover whether or not hyperplasia is present. The inferior thyroid artery and the recurrent laryngeal nerve should be exposed and cleaned as well as possible. Next one may divide the superior pole vessels so that the posterior surface of the thyroid may be easily inspected(105). Following medial rotation of the gland, the inferior parathyroid may be detected ventral to the recurrent nerve and the inferior thyroid artery. If the inferior gland is not in its usual location, the search may be extended to the pharynx, larynx, carotid sheath, tracheo-esophageal groove, and the retroesophageal area(98). Following this, the posterior superior mediastinum may be easily inspected(24). Any branch of the inferior thyroid artery which runs downward should be followed since it may represent the blood supply to an adenoma which resides in the mediastinum(24). If no adenoma has been found after a complete cervical dissection, the thyroid gland should be carefully palpated for the presence of nodules. If any thyroid nodules are found, the thyroid may be incised or a lobectomy may be performed either at the time of the original procedure or if hyperparathyroidism persists after a negative cervical and mediastinal exploration, subtotal thyroidectomy may be performed at a later date(24, 16). All four parathyroids should be identified although, as has been stated before, more or less than four glands may normally be present(67). It should be emphasized that normal parathyroid glands should not be removed; however, a minute specimen may be taken for biopsy purposes if the gross identification is uncertain. The presence, by frozen section, of atrophic glands is proof that the patient has hyperparathyroidism. However, the finding of normal glands should not negate the diagnosis because occasionally the uninvolved glands may appear normal, both grossly and microscopically(24,64). Before concluding that an adenoma is actually within the anterior superior mediastinum, three atrophic parathyroids should be identified in the cervical region and a fourth should be excluded by a reasonably extensive cervical dissection (24).

If a single adenoma has been found and the remaining parathyroids are atrophic, the procedure may be terminated at this point. One must be alert to the possibility of multiple adenomas. If primary hyperplasia is found, all four glands should be identified and a well vascularized fragment of hyperplastic tissue about three or four times the size of a normal gland should be preserved. Black and Sprague reviewed all reported cases of primary hyperplasia and concluded that hyperparathyroidism had not persisted when as much as 200 mg. of hyperplastic tissue had been saved, and that tetany had not ensued when as little as 30 mg. had been saved (26). In this condition, approximately 200 mg. of one gland should be preserved(32). It is obvious that weight estimation in terms of milligrams may be a difficult task.

In approximately 2 per cent of the series reported by Black and Zimmer, the patients had an unusual syndrome characterized by hyperparathyroidism and hyperinsulinism, and in three of the five cases by a pituitary tumor also. This syndrome is referred to as "polyendocrine adenomas" and more than one parathyroid is always involved and all glands may be involved. The adenomas tend to differ from the usual single adenoma in that the parathyroid enlargement seems to result from multiple nodules. As stated before, the proper treatment of multiple adenomas is removal of all enlarged glands. If all four glands are involved, a viable portion of one gland should be preserved to prevent tetany. Not enough cases have been reported. Thus, it is not known whether the parathyroid hyperfunction will return in such cases and how much tissue should be removed(27). The surgical management of parathyroid carcinoma has been discussed in another section of this paper.

If no source of parathyroid hyperfunction has been discovered after a thorough exploration of the neck one must be prepared to undertake a search of the mediastinum(69). There are varying opinions with regard to the timing of this secondary procedure. It is the feeling of Black that a mediastinotomy should not be undertaken for three months after a negative cervical exploration since a small undetected cervical adenoma may, in the interim, have undergone destruction or devascularization, with subsequent abolition of the hyperparathyroidism(24). Cope is in accord with Black in the feeling that mediastinotomy should be a separate procedure(52). A number of surgeons feel that mediastinotomy can be performed at the time of the cervical exploration without undue difficulty unless the patient is a poor surgical risk(99, 32, 142). In most cases, according to Goldman, when a nodule is palpable in the anterior superior mediastinum, the tumor can be removed through the cervical incision without the necessity of a sternal split (69). Rienhoff cautions that blunt dissection of the mediastinum through a cervical incision is dangerous from the standpoint of tearing blood vessels and pleura and is of the opinion that a sternal splitting procedure offers no great surgical hazard(142).

The mediastinal exploration may be accomplished by splitting the sternum from the manubrium to the third interspace with subsequent mobilization of the pretracheal fascia. Because of the embryological relationship of the inferior parathyroids to the thymus, the area of the thymus should be explored painstakingly. The exploration should also be conducted anterior and posterior to the innominate vein and laterally to the lung roots and pleura(98). If no tumor is found elsewhere, total resection of the thymus should be performed(99).

Tetany occurs rather frequently following the removal of a parathyroid adenoma(24), and indeed this should probably be sought as an index of successful removal of all the hyperfunctioning tissue(69). Oliguria occurs following removal of these tumors, probably due to the abrupt decrease in the level of parathormone which has a diuretic effect. The development of oliguria may also be a welcome sign that hyperparathyroidism has been abolished(24). In cases without bone involvement there may be insignificant postoperative hypocalcemia(15). However, in patients with high preoperative alkaline phosphatase, an indication of osteoblastic hyperactivity, one may predict postoperative tetany(16).

The prognosis following parathyroidectomy is somewhat sobering. In spite of successful removal of the hyperfunctioning tumor, a significant percentage of patients go on to expire from progressive renal failure(85). Brenizer reports that a depressing 34 per cent of those treated went on to die from impaired renal function and/or cardiovascular complications of hypertension (32). It is readily apparent that the correct diagnosis and surgical treatment must be carried out before the skeleton, kidneys, and heart have become permanently damaged(32).

MILK-ALKALI SYNDROME (BURNETT SYNDROME)

This syndrome should always be considered in a patient with suspected hyperparathyroidism who also has ulcer symptoms. The fact that hypercalcemia might result from the treatment of peptic ulcer was observed as early as 1936(51). The diagnostic implications of this observation were brought forth in 1949 by Burnett, Commons, Albright, and Howard(37). They described the characteristic features of this disorder as follows: a history of prolonged and excessive intake of milk and absorbable alkali; hypercalcemia without hypercalcuria or hypophosphatemia; normal serum alkaline phosphatase level; renal insufficiency with azotemia; mild alkalosis; calcinosis manifested especially by an ocular lesion resembling band keratitis; and an improvement in the clinical state on an intake low in milk and absorbable alkali.

It may be important to differentiate between the hypercalcemia caused by the milk-alkali syndrome and a parathyroid adenoma. Although no single feature of the milk-alkali syndrome is completely dependable in ruling out hyperparathyroidism, certain measures are worthy of consideration(102). Persistent hypercalcuria on a low calcium diet may be helpful in ruling out the Burnett Syndrome and in establishing the diagnosis of hyperparathyroidism(122). The latter study is only of value if the milk-alkali syndrome has not progressed to the point of non-reversible renal failure. If irreversible renal impairment has occurred, the differentiation of these two conditions may depend on surgical exploration and examination of parathyroid tissue(102). Most of the reported cases have shown ocular calcification (band kerotopathy); thus, the absence of this variety of calcinosis is presumptive evidence against the Burnett Syndrome(102).

Since people with hyperparathyroidism frequently have ulcer symptoms and self medicate with milk and alkali, the differentiation may be particularly difficult(146). That the index of suspicion must be very high is supported by the fact that a number of cases have been reported in which a parathyroid adenoma has been found in cases in which the milk-alkali syndrome was suspected(102, 122, 14, 40).

ROENTGEN FEATURES OF HYPERPARATHYROIDISM

According to Pugh(135), only about one-third of patients who have hyperparathyroidism show sufficient bony abnormality to make the roentgen diagnosis possible. In this vein, it is of interest that only 9 per cent of Goldman's last 23 cases had evidence of bone involvement which is in marked contrast to the early history of hyperparathyroidism(70). The foregoing is a reflection of improved diagnostic measures and increased index of suspicion with the result that the diagnosis is being made before bone disease is apparent.

One may use the serum alkaline phosphatase as a screening measure for the detection of bone disease since skeletal roentgenograms will uniformly be unrewarding in cases with normal alkaline phosphatase. In those patients with hyperparathyroidism with elevated alkaline phosphatase, one may expect roentgen evidence of hyperparathyroidism unless there is some other reason for elevated levels of alkaline phosphatase.

There are several anatomical locations which may be of aid to the clinician if hyperparathyroidism has involved the skeletal system. The most important of these are the hands, the skull, and the teeth.

Generalized decalcification of the bones of the hand may occur but the most distinctive, and indeed pathognomonic feature is subperiosteal resorption of bone best seen in the middle phalanges. There may also be resorption of the tufts of the distal phalanges. Subperiosteal resorption of bone is a "lacelike" decalcification of the cortical bone just beneath the periosteum. Though pathognomonic of hyperparathyroidism, this finding does not distinguish between the primary and secondary forms of the disease.

The dental features of hyperparathyroidism cannot be considered pathognomonic of the disease but they may be of aid in establishing the diagnosis. The absence of the lamina dura, which represents the cortex of bone around the teeth, is a further manifestation of subperiosteal resorption of bone. In some cases the lamina dura may be absent even when the rest of the skeleton appears normal(98). It is well to examine the bone around the teeth since the trabecular structure of the surrounding bone may be changed. The teeth appear abnormally dense in contrast to the surrounding bone because no calcium is lost from the teeth. The dental features of hyperparathyroidism have several shortcomings since the elderly are often edentulous and these features, if teeth are present, are not diagnostic of the disease. The lamina dura may also be absent in osteomalacia and Paget's disease. Again, the dental x-ray will not distinguish between primary and secondary hyperparathyroidism. It is of interest that a case has been reported in which there was redeposition of calcium following removal of a parathyroid adenoma with subsequent reappearance of the lamina dura(171).

Skull x-rays are not as rewarding as those of the hands or the teeth; however, they may be of aid in establishing the diagnosis. The skull shows a strange type of decalcification which renders the inner and outer tables indistinct. This peculiar decalcification of the skull may also resemble the roentgen picture of Paget's disease. Skull films, as is the case with the hands and the teeth, will not distinguish between primary and secondary hyperparathyroidism.

In addition to the roentgen findings already described there may be the better known classical form of osteitis fibrosa cystica with skeletal deformities, bone cysts, and pathological fractures. Generalized severe osteoporosis may also occur as a skeletal finding in hyperparathyroidism.

There are certain other conditions which may be considered in the roentgen differential diagnosis of hyperparahyroidism. The most important fo these is fibrous dysplasia of bone. This condition may be mistaken for hyperparathyroidism and may lead to unwarranted laboratory studies and even unnecessary cervical explorations. Pugh rightly points out the fact that for many years fibrous dysplasia was not distinguished from osteitis fibrosa cystica of hyperparathyroidism and it is unfortunate that this confusion has crept into the literature. Fibrous dysplasia of bone is not a disturbance of metabolism but a localized disturbance in growth and development of bone which usually appears during childhood and advances slowly until adulthood has been attained. There is no disturbance in calcium or phosphorous metabolism. Subperiosteal resorption of bone is never seen, there is never loss of the lamina dura, and granular osteoporosis of the skull is not seen. The condition can therefore be readily distinguished from bone disease caused by hyperparathyroidism if the hands, teeth, and skull are studied.

Renal osteodystrophy, or renal rickets, when it occurs in children may be roentgenologically indistinguishable from primary hyperparathyroidism. This condition is the result of prolonged renal insufficiency. Renal involvement may occur with hyperparathyroidism and the differential diagnosis should be made if at all possible since surgery is life-saving in primary hyperparathyroidism and of no use in cases of renal osteodystrophy. It is said that vascular calcification is much more frequent in cases of renal osteodystrophy than in cases of primary hyperparathyroidism although vascular calcification has been described as a diagnostic feature of hyperparathyroidism(12, 28, 145).

Other conditions of bone which must be considered in the differential diagnosis of hyperparathyroidism are osteomalacia and osteoporosis. A discussion of their x-ray features is beyond the scope of this discussion.

HYPOPARATHYROIDISM

In the face of current enthusiasm for improved methods of diagnosis and treatment of states of hyperfunction of the parathyroid gland, hypoparathyroidism has assumed an undeservedly minor role in parathyroid literature.

The diagnosis and successful long-term treatment of hypoparathyroidism can be a stern challenge to the diagnostic acumen of the physician and can be an equally vexing problem to the patient who, much like a diabetic, must assume a large share of the responsibility in the management of his affliction.

The classification of hypoparathyroidism is of more than academic interest since the etiology is not always parathyroid damage at time of thyroid surgery and because the less common varieties of parathyroid hypofunction are also amenable to therapy.

The following is considered by the author to be a practical working classification of hypoparathyroidism:

(1) POSTOPERATIVE HYPOPARATHYROIDISM
  a. Surgical Tetany(98) (post-thyroidectomy hypocalcemia)
  b. Tetany following removal of a functioning parathyroid adenoma (69)
(2) IDIOPATHIC HYPOPARATHYROIDISM(163)
(3) PSEUDOHYPOPARATHYROIDISM (Seabright-Bantam Syndrome)(7)
(4) PSEUDO--PSEUDOHYPOPARATHYROIDISM

POSTOPERATIVE HYPOPARATHYROIDISM

The history of tetany or tetanic equivalents following thyroid surgery goes back to the year 1883 when Weiss, working at the time in Billroth's clinic, reported the first case of postoperative or parathyroprivic tetany(177). Since that time an enormous literature on this subject has developed.

It can readily be appreciated that many cases of hypoparathyroidism occur in this country each year when one considers that numerous thyroidectomies are being performed daily. Hypoparathyroidism most commonly occurs following those cases of thyroid surgery where inadvertent damage to, or removal of the parathyroid glands has taken place(9). The preceding would seem to be the sole mechanism involved; however, it would appear that there are other factors at play. That injury to or removal of the parathyroids during thyroidectomy does not always produce tetany is conceded by some observers, while others have reported its presence when every technical procedure to identify and preserve the parathyroids was meticulously carried out(66). For some unknown reason, the incidence of postoperative hypoparathyroidism is more frequent in women(104). Varying figures have been given for the incidence of postoperative hypoparathyroidism which range from 0.5 per cent to 1.5 per cent according to Swinton (168), to 3 per cent in the experience of Bell and Bartels, and Buckwalter(20, 29, 36) and as high as 6.3 per cent of 188 patients reported by Lachman(104). The diagnosis may be very obvious if tetany occurs following thyroidectomy; however, in the absence of tetany, the diagnosis may easily be missed(103, 172, 36).

Symptoms of parathyroid deficiency may occur within 48 hours(110, 183, 66), may become manifest in the week following surgery(36), or may not become apparent until years later when complications of uncontrolled hypoparathyroidism occur. A vague clinical picture following thyroid surgery may not be recognized as hypoparathyroidism and part of this diagnostic confusion may be due to associated hypothyroidism(136). Although much emphasis in the literature has been placed on the fact that the idiopathic variety of parathyroid insufficiency may go unrecognized, it is not so readily appreciated that postoperative hypoparathyroidism may be completely overlooked(103). Reckendorf and McGavack have reported a case of postoperative hypoparathyroidism which occurred almost 30 years after thyroidectomy and was apparently made clinically manifest at time of menopause (137). A perusal of parathyroid literature would suggest that parathyroid dysfunction following surgery is usually transient; however, the experience of Buckwalter, et al, would indicate that parathyroid deficiency of permanent nature following thyroid surgery is not infrequent(36). Since there is no effective therapy for many diseases, their recognition is of secondary importance; however, in the majority of instances of hormonal deficiency the results following therapy are so gratifying as to compel early diagnosis. This is particularly true of hypoparathyroidism (103). Postoperative tetany may be a welcome sign following removal of a parathyroid adenoma since it may be an indication of complete ablation of all excess parathyroid tissue(69). The symptoms of hypoparathyroidism may be varied and vague(75, 109). There may be latent tetany, fatigue, muscular weaknesses, gastrointestinal irritability, attacks of unconsciousness, epileptiform seizures, cramps of the extremities, numbness of the extremities, carpopedal spasm, laryngeal stridor, mental dulling, frank psychosis, generalized muscular rigidity, opisthotonos, prolongation of the electrocardiographic QT interval, cataracts, disturbances in nail growth, sparse dry hair, and severe headaches(36, 172, 72, 136). The "ectodermal triad" consisting of dry skin, sparse hair, and ridged brittle nails is frequently regarded as a manifestation of hypothyroidism and may mask a case of hypoparathyroidism (104, 71). Kyle, Schaaf, and Meyer state that in a patient who has undergone thyroidectomy, the following situations, regardless of the time which has elapsed since thyroidectomy, should make one seriously consider the dilagnosis of hypoparathyroidism(103):

1. Tetany or tetanic manifestations.
2. Appearance of cataracts at any age.
3. Epileptiform manifestations.
4. Basal ganglia calcification.
5. Increased intracranial pressure with papilledema.
6. Chronic skin disease.
7. Hyperventilation syndrome.
8. Instances of psychosis with various neurotic manifestations.
9. Occurrence of any muscle or joint symptoms which may be attributed to muscle spasm.

One must suspect the diagnosis when certain unexplainable syndromes occur, particularly in individuals who have undergone thyroidectomy(172). It should be emphasized that progression to non-reversible complications such as cataracts, convulsive disorders, and mental deterioration may occur in the patient who has none of the common stigmata yet has uncontrolled hypoparathyroidism(36). As in the case of hyperparathyroidism, the clinician must have a high index of suspicion if certain permanent sequelae are to be avoided. In Buckwalter's series, the only common denominator in those who developed complications due to postoperative hypoparathyroidism was a prolonged period during which the hypoparathyroidism was uncontrolled(36), which further spotlights the need for early diagnosis and treatment.

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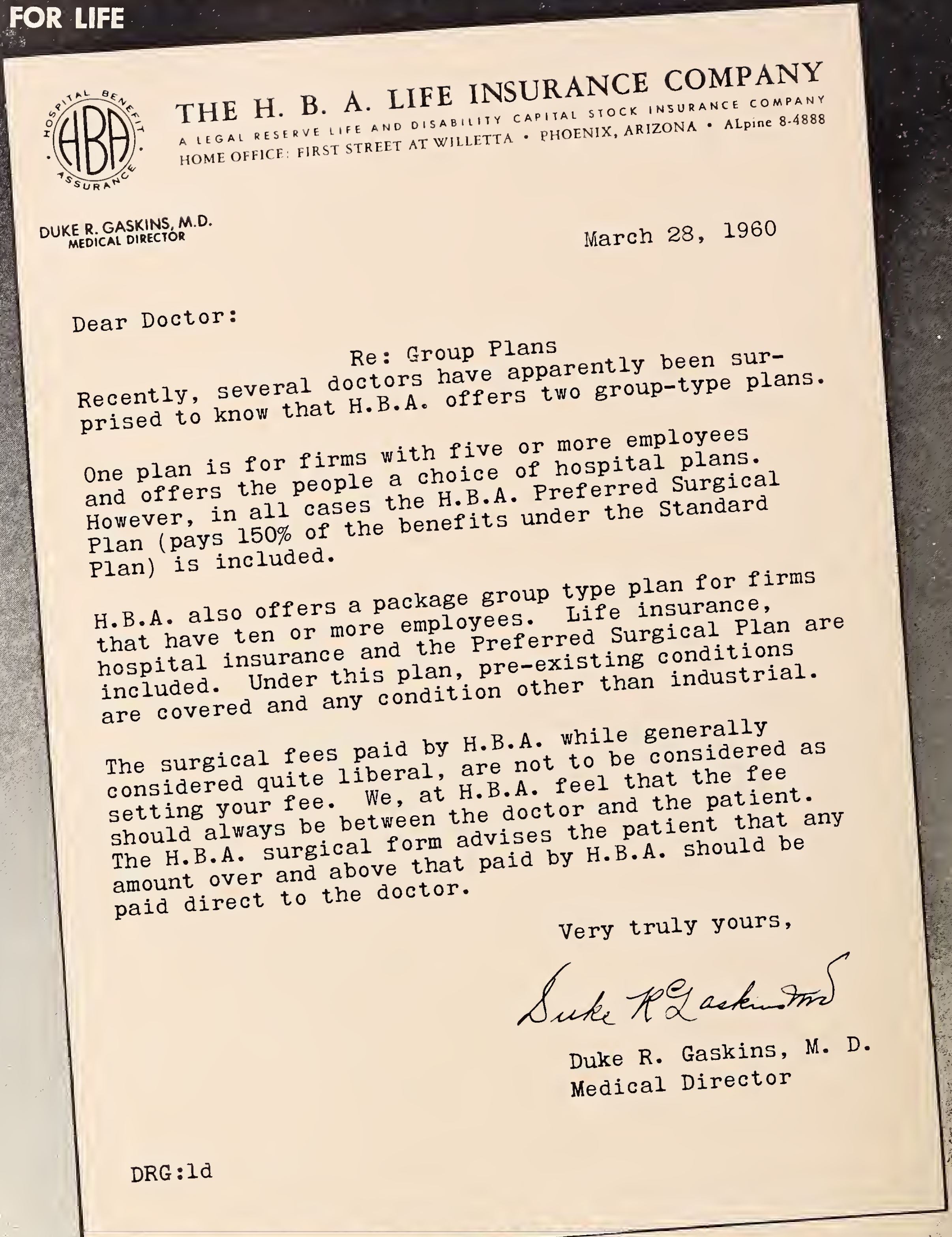

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DUKE R. GASKINS, M.D.
MEDICAL DIRECTOR

March 28, 1960

Dear Doctor:

Re: Group Plans

Recently, several doctors have apparently been surprised to know that H.B.A. offers two group-type plans.

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Editorial

OUR UNIQUE PROFESSIONAL STANDING LOST

There is an increasing concern about the diminishing number of QUALIFIED YOUNG MEN who choose MEDICINE as their career. It is, indeed, deplorable that we who have been carrying the banner of medicine have to answer – Why has Medicine lost its commanding position in minds of men?

The Council on Medical Education and Hospitals of our A.M.A. have made a statement which is a debasing reflection on our reputation. They state – "Medicine is finding increased competition for the pool of top-ranking students because it no longer occupies the unique position as a profession which it held in the past –."

It is, indeed, a paradox, that we should be losing the respect of those whom we serve, during the last twenty years, while simultaneously there has been more scientific progress in the relief of human ills than had been made in all previously recorded history.

The Western Interstate Commission for Higher Education has cleverly tried to excuse our position in their statement – "There are now many more professions competing for available manpower which confer prestige, intellectual satisfaction and monetary award." Their analysis can not be wholly correct, because there can be no greater prestige than that which comes from the proper direction of human emotions, the relief of suffering, and the prolongation of life. The intricate scientific advancements of

ARIZONA MEDICINE

Journal of

The ARIZONA MEDICAL ASSOCIATION, Inc.
AND
MEDICAL SOCIETY OF THE
UNITED STATES AND MEXICO

VOL. 17 APRIL, 1960 NO. 4

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules should be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English or Spanish, especially with regard to construction, diction, spelling and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
6. Exclusive Publication – Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unused manuscripts.
7. Reprints will be supplied to the author at printing cost.

(The opinions expressed in the original contributions do not necessarily express the opinion of the Editorial Board.)

medicine tax the intellect to the maximum, and Medicine still ranks high in monetary awards.

It will be a catastrophe if the prestige of Medicine sinks further in rank in the fields of human relationships.

The contention that our prestige has declined is statistically supported. From 1920 to 1955 the percentage of college age population, enrolled in institutions of higher education, increased from 4.6 to 18.2 per cent; but during the same period, the number of college students who went on to study medicine dropped from 2.4 to 1 per cent of those going on into graduate or professional fields. A further decline of 0.6 percent is expected by 1965. The number of individual applicants to the medical schools in the United States has dropped from 24,242 in 1948 to 15,791 in 1957-58. There was one less graduate of medicine in 1958-59 than in 1957-58 (6,860 and 6,861 respectively) and 117 less than in 1954-55. This is during a time of increasing population, when it is estimated that we will need a gradual increase to 10,000 graduates a year by 1975. These statistics, when added to the many disputable accusations made by the writers in our non-professional popular magazines, justify the conclusion that something must be wrong.

Our admission of failure is further exemplified by our advocation of the implementation of career programs, to induce young men to pursue a profession which formerly had no peer. Our problem in the past was that it excluded many of those qualified persons who dedicated themselves to a career for the relief of human suffering.

During the last 25-30 years, scientific medicine has advanced more than in all previously recorded history — the average American is demanding twice as much service from the individual physician — and people are being hospitalized three times more frequently. Has the rank — and — file of the medical profession become too secure and too smug in its unique position? Has our pre-occupation made us derelict in the fulfillment of our over-all purpose? Have we become so dependent on our material scientific achievements that we have forgotten the social sciences? The answer to these questions is — yes!

We have, by indifference, failed to properly convince society that we sincerely have fulfilled our obligations to them. We have failed to honestly display our relative economic attainments. Above all, we have failed in our presentation of the contrasts between our free-enterprise system of medical care and the welfare-socialistic systems. We have failed to take the extra time and steps necessary to convince the public that the present communal advances will inevitably result in an insufferable catastrophe.

Young men are avoiding medical careers because of the trend toward socialized medicine. They are choosing professions which are more materialistic in scope, because materialism can be more easily comprehended by the selfish politician, who will be in control.

God will need to help humanity whenever the controlling segment of our society decides that science has advanced sufficiently to justify the governmental management of the health of its sentimental peoples by the distribution of "miracle drugs."

— *L.B.S.*

STEROID THERAPY IN OPHTHALMIC LESIONS

A REPORT published in the Journal of the American Medical Association July 25, 1959 by Irving H. Leipold, M.D., Philadelphia, emphasizes the importance of accurate diagnosis of ocular lesions prior to the use of steroids for treatment. There are many inflammations of the eye which respond well to the local instillation of steroid drops, such as contact dermatitis, rosacea-keratoconjunctivitis, vernal conjunctivitis, allergic conjunctivitis, allergic keratoconjunctivitis, marginal corneal ulcers, and phlyctenulosis. The article emphasizes that in addition to these lesions which seem to respond to this medication, there are many lesions that do not respond to steroid medication and there are some inflammations which seem to be aggravated by the instillation of steroid drops. Some bacterial ulcers of the cornea might respond to steroid therapy if administered with an antibiotic which is specific for the infection. However, the presence of a herpes ulcer of the cornea is a definite contraindication to the use of steroids. It might result in a perforation in the cornea if used injudiciously. Most conjunctival inflammations will respond well to a specific antibiotic and the presence of a steroid is not often necessary or helpful in the control of the inflammation. Steroid therapy may reduce the local reaction, but may interfere with natural resistance. Fungus infections of the cornea can be produced experimentally by pretreatment with steroids.

A safe rule to follow for safe use of steroids in external ocular disease should be that when doubt exists as to diagnosis, or the likelihood of an unfavorable result from steroids, steroids should not be used. In general, it might be wise for most general practitioners to use the rule that if a local antibiotic does not show a reduction in the appearance of the inflammation in 24 to 48 hours, the patient should be referred to a qualified ophthalmologist for further evaluation and treatment.

A.K.H.

ANOTHER NEW JOURNAL

The advent of another new journal in the cluttered field of medical publications may raise eyebrows other than this reviewer's. C. V. Mosby Company, publishers of the new bi-monthly *Clinical Pharmacology and Therapeutics,* official publication of the American Therapeutic Society, claims that the extensive literature on pharmacology is "hopelessly scattered among all medical journals. Obviously, no family physician can find by himself the significant information he must have to employ potent pharmaceuticals effectively and safely. More deplorable than the disordered state of the literature is the fact that much of it is uncritical, leaving the reader with little more dependable information than he had before he read it."

The list of authorities comprising the Editorial Board leaves no doubt as to the quality of the new journal, and critical evaluation of the material published would seem implicitly assured. Just how the business manager is going to finagle the continuing sale of advertising space to a drug manufacturer whose product gets a lacing in the scientific text is a problem — yes, indeed.

This reviewer has no answer to that one, but he does seriously question the announcement blurb: "Here is news that family physicians have long awaited." The family physician, already submerged by the flood of "must-be-read" literature in the medical and ad-ante-con-in-inter-ob-post-prae-pro-sub-super and para medical sciences, is not likely to latch on to *Clinical Pharmacology and Therapeutics* as the long-awaited answer to his needs. Many of us who happily discovered and liked the critical evaluations as presented in *The Medical Letter* (a non-profit publication on drugs and therapeutics issued twice monthly) will continue to read it.

C.L.R.

INCRIMINATED

"I do not believe that anyone can do anything to get kicked out of this Medical Society." This statement was made recently, by a reputable physician, following a discussion at a Medical Society meeting relative to the professional behavior of one of its members. Such a statement implies that even now, after we have been duly warned, we are still derelict in our directed obligation to police our own membership.

The editorial — "Policing the Ranks" (AMA News — January 25, 1960) states our responsibilities very clearly. This admonishment is embellished with such epigrams as . . . "All that is necessary for the triumph of evils is that good men do nothing." (Edmund Burke) and "One man can't build a big organization but one man can tear it down" (FBI slogan). Because of its timely significance, the AMA editorial is reproduced below in hopes that we may restudy it — it is not "filler".

Let us not become a part of the — "increasing moral slump" — recently referred to by the former President, Herbert Hoover — or play into the hands of the socializers who use our frailties to advance class hatred . . . which is essential for the establishment of their degrading "isms".

LBS

POLICING THE RANKS

All that is necessary for the triumph of evil is that good men do nothing. — Edmund Burke.

The good reputation of the many often is at the mercy of the few.

Dissatisfaction with one physician's services, his charges or some other aspect of medical care can result in complaints that undermine the confidence of the public in the entire medical care system of a community. Even though many complaints are unjustified or stem from misunderstanding, their existence can create a serious public relations problem.

One solution to solving this problem has been found to be an active and dedicated grievance or mediation committee in each medical society. The committee provides a sounding board for the grievances, imagined or real, of patients whenever disagreements cannot be resolved on an individual basis. By justly handling disputes and rendering a fair decision, these committees demonstrate to the public the desire of the medical profession to bring the best medical care to everyone and to serve the public interest.

But if these grievance committees are to be effective in asissting to maintain the high levels of professional deportment already established by the *Principles of Medical Ethics,* they must be empowered with authority to receive complaints, to investigate, mediate, arbitrate, and, where necessary, refer them to appropriate bodies for adjudication.

Many medical societies now have bylaws that give their mediation committees full power to determine a fair fee in any case brought to its attention. And it can recommend suspension or expulsion from the society for any practitioner who flouts its will.

While organized medicine has no built-in power to crack down on doctors who demand excessive fees, fail to respond to calls, and so forth, any medical society that wants to discipline its members may amend its bylaws accordingly.

Unless the few recalcitrant physicians are disciplined, the whole profession will be tarred with the same stick which should be applied to the few.

Such self-regulatory machinery is not primarily to defend doctors, but to protect patients and assure them their rights. But again to be effective, the public must know of the committee's existence and understand how to use it. Committee members must be willing to perform delicate and sometimes odious tasks. And unless a committee accepts its responsibility to act upon a complaint fairly and with a minimum of lost time, its effectiveness is questionable.

Since it is the bad apple in the barrel that causes complaint, the medical profession cannot afford to shelter the doctor who puts himself above the profession and the public he serves. For in the practice of medicine today, a physician's every action reflects not only upon himself but also on the entire profession. To besmear an entire profession with the misdeeds of a few, is an injustice of the rankest sort.

While it is never pleasant to find a colleague out of line and to recommend some form of discipline, it is the responsibility of the profession to police its own ranks and to eliminate professional incompetence and economic abuses. The FBI slogan, *"One man can't build a big organization but one man can tear it down,"* applies to medicine, too.

If local societies fail to curtail unethical practices, ethics lose their effectiveness. And the public soon loses confidence in the profession as a whole.

Dr. David B. Allman, past president of the AMA, stated it so well when he said, "If we individual physicians do not keep medicine's house in order, outside organizations — like . . . government — will do it for us. That is why medical grievance committees are protecting the honest and capable physicians as much as they are the patient."

Grievances and misunderstandings are bound to occur as long as the principals involved are human beings. But such grievances should be resolved, whenever possible, to the mutual satisfaction of both the patient and the physician.

While there is a slight difference between being unethical per se and not serving the best interests of the public, neither can be tolerated if the profession as a whole is to deserve the great confidences reposed in it by the public.

FOUNDATION FOR THE BLIND

The American Foundation for the Blind reports that more than one thousand blind students are enrolled in colleges and universities in the United States.

In Memoriam

CHARLES A. THOMAS

1877-1959

Charles A. Thomas, M.D.

Dr. Charles A. Thomas, pioneer physician and surgeon in Arizona, passed away on November 5, 1959, after a prolonged illness 10 years after his retirement from active practice.

Dr. Thomas was born in Brandon, Mo., 82 years ago, and he graduated from Tulane University at New Orleans in 1905, after which he practiced in Oklahoma for several years.

He came to Tucson in 1912, and his strong personality and devotion to Medicine were immediately felt in this community.

A surgeon for the Southern Pacific Railroad, he was the driving force behind the founding of the Southern Pacific Tuberculosis Sanatorium in Tucson in 1931. He remained as assistant to the chief surgeon of the Southern Pacific Company until his retirement in 1946.

In 1920, together with his friend, Dr. S. C. Davis, he founded the Thomas-Davis Clinic, and was the guiding spirit of this group for 27 years.

Dr. Thomas had the distinction of being one of the pioneers in chest surgery, having been interested in this branch of surgery since its inception. He was one of the first surgeons to do thoracoplasty for the treatment of tuberculosis, and performed the first lobectomy in Tucson.

During his life, Dr. C. A. Thomas acquired many well deserved honors in Medicine and civic life.

He was a charter member of the College of Chest Physicians, a Fellow in the American College of Surgeons, past-president of the Pima County and Arizona State Medical Societies, and honorary member of the Sonora, Mexico State Medical Society — as well as past-president and honorary member of the staff at St. Mary's Hospital.

During World War I, he was a major in the Medical Corp, and served as surgeon at Walter Reed Hospital. During World War II, he served as chairman of the local office of Procurement and Assignment.

With his passing, Dr. Thomas has left a void in the community which cannot be filled; and his death is lamented not only by his bereaved family, but by the numerous friends in this country as well as below the border.

RESOLUTION:

WHEREAS, the death of Charles A. Thomas, M.D., in his 83rd year, marks the end of a distinguished career in the profession of medicine, in no sense does it end his influence for good in the community where he served so faithfully and so productively, and

WHEREAS, in particular, the Pima County Medical Society was privileged to have his guidance and wise counsel throughout the many years he labored for the Society in various offices of responsibility, including the Presidency,

BE IT THEREFORE

RESOLVED: That the Pima County Medical Society inscribe in its permanent records its recognition of enduring gratitude to an honored colleague, and convey to Doctor Thomas's family an expression of deep sympathy in their bereavement.

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Rautensin bibliography: 1. WRIGHT, W. T., JR.; POKORY, C., AND FOSTER, T.: AM. PRACT. & DIGEST. TREAT. 7:1992, 1956. 2. SUCKLE, E.: GERIATRICS 11:509, 1956. 3. FINCH, W. J.: J. DKLAHDMA M.A. 50:259, 1957. 4. TERMAN, L. A.: ILLINOIS M. J. 3:67, 1957. 5. GIFFORD, R. W.: J. ARKANSAS M. SOC. 55:31, 1958. 6. FDRD, R. V., AND MOYER, J. H.: POSTGRAD. MED. 23·41, 1958.

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Arizona Medical Association Reports

PROFESSIONAL LIAISON COMMITTEE

SUBCOMMITTEE REPORTS

Allied Professions

Robert H. Cummings, M.D., chairman, reported that on January 17, 1960, on invitation, he attended a meeting of the Arizona State Chiropodist Association for the purpose of reviewing a movie film developed by that group. It was produced at the Hackensack General Hospital, New Jersey, a 350-bed general hospital having a clinic in chiropody, with an appreciable patient load. This clinic is useful in management of peripheral vascular disease, predominantly in diabetes, and as an accessory to the activities of the orthopedic department. The film was produced by Wyeth.

The film itself represents a very artistically produced medical film, in color, running time about twenty minutes. It emphasizes, with picture and discussion, the role of the chiropodist in the clinic of that hospital. The cases documented are scientifically worked up and presented; and the chairman came away with the feeling that this branch really offers something, if it would be used. Their technique for treating diseases of the foot are well conceived, and based on good medical practice.

Approval of this film as a vocational education film is sought of this Association. Last year the Chiropodists sought to exhibit it at the annual state meeting of this Association. Facilities were not available; however, it was suggested that the film be shown at the County level which, of course, they are willing to do. The Chiropodists feel that there are young men, who by preparation, or by inability to complete a medical education, might be interested in another branch of the healing art, in this case, namely, chiropody.

Doctor Cummings recommended that we extend a hand to these men, and attempt to expedite their showing of this film at the County level, and possibly at the State level, as an exhibit. For the purpose for which they wish to display this film, if the movie is not homophil to the practice of medicine and if they wish to show it to the groups stated, possibly it is alright. If they want to show it at societies, that is up to them to make contact. As the chairman only and without action by the subcommittee, and the subcommittee would be glad to look at this film if you would like it to do so, as a group, I would like to recommend that we extend a hand to this group (Chiropodists) and help them to show the film to County Societies.

Another item of import concerning this subcommittee which the chairman brought to the attention of the committee as a whole was the prompt response by the President of the Association, Doctor Melick, to the White Mountain Committee's Hospital Association, Inc. of Springerville. The question posed was: "What will the Association's reactions and standing to Doctors of Osteopathy being on the hospital staff be?" The President responded that the Principles of Medical Ethics provide in part:

"A physician should practice a method of healing founded on a scientific basis; and he should not voluntarily associate professionally with anyone who violates this principle."

Further, that the House of Delegates of the American Medical Association in June last, regarding relations between doctors of medicine and doctors of osteopathy, established the following policy:

"All voluntary professional associations between doctors of medicine and those who practice a system of healing not based on scientific principles are unethical."

In conclusion, Doctor Melick stated that this Association would not, at this time, consider it ethical for doctors of medicine to serve on a hospital staff with doctors of osteopathy.

IT WAS MOVED by Doctor Frissell, seconded by Doctor Bean and unanimously carried that the report of Doctor Cummings be accepted.

Arizona AMEF

In the absence of Harold W. Kohl, M.D., chairman, Doctor Steen presented in his behalf the following report:

The annual dues increase of $10 per active member of the Arizona Medical Association, Inc. which was voted by the House of Delegates in 1957 has continued in force, and has served as a nucleus for the contributions by the medical profession of Arizona to Medical Education. Many other States have adopted this plan, some with dues increases as high as $25.00 per member earmarked for AMEF. It seems probable that other State Medical Associations will adopt similar plans this year.

The "Arizona Plan" with which we are all now familiar has found favor with pharmaceutical associations in many other States. While currently the figures are not available, it is evident that the action of the "Arizona Plan" resulted in a sizeable addition to the earmarked funds contributed in 1959 through AMEF to Medical Education. In Arizona alone, with the compilation yet incomplete, the contributions by pharmacists to Medical Education under the "Arizona Plan" will exceed $1,000. A booklet "The Arizona Plan" and a copy of a letter circulated in October, 1959 by Mr. Alfred J. Duncan, secretary of the Arizona Pharmaceutical Association, are on file.

The Woman's Auxiliary to The Arizona Medical Association has been a great force in the campaign for funds for aid to Medical Education. Many hundreds of dollars have been raised by our ladies through bridge marathons and other projects, including a great deal of thought and effort. We owe the members of our Auxiliary a vote of gratitude and praise.

Since Arizona adopted the dues increase of $10.00 earmarked for Medical Education through AMEF there has obviously been more interest on the part of the medical profession in the needs of Medical Education. As a result, many members of our state association contributed in 1959 amounts ranging from $10.00 to $300.00 over and above the $10.00 that each contributed through their annual dues.

It is strongly urged and recommended:

1. That the Woman's Auxiliary to The Arizona Medical Association, Inc. be informed by a letter to be read at its annual business meeting in 1960 of the gratitude we express and of the support we pledge to them in their continued efforts.

2. That the dues increase of $10.00 per active member per annum earmarked for aid to Medical Education through AMEF be held inviolable until such time as it may seem practicable to increase that amount.

3. That all doctors in our State contemplate well the financial needs of our medical schools as well as the constant attempts at each Session of Congress to introduce bills to subsidize educational institutions, including medical schools; and that each individual one of us ask ourselves," Have I done my part in helping to preserve medical education in the United States free of government control and dictation?"

IT WAS MOVED by Doctor Frissell, seconded by Doctor Young and unanimously carried that the written report of Doctor Kohl be accepted.

Careers

Zenas B. Noon, M.D., reported that possibly the most important accomplishment at this meeting would be to determine upon the membership composite of his subcommittee. Suggested names of members of the Association have been previously compiled, reviewed by the President, Doctor Melick, and it has been suggested that the membership be selected on a geographical area basis, pointing out that it might be wisdom first to select within the subcommittee membership composite an "Executive Committee" who will comprise the directive force and leadership in carrying out the intents and purposes of the activity. The following members were so recommended to comprise the executive body and, following its establishment, then an "advisory" group could be appointed and in effect comprise the working body in the field:

COCONINO: Dr. Young, Roy O. (Flagstaff).

MARICOPA: Drs. Green, John R. (Phoenix); Lawrence, Howard C. (Phoenix); Matte, Jr., Paul J. (Phoenix).

PIMA: Drs. Dexter, Richard L. (Tucson); Havemeyer, William F. (Tucson).

SANTA CRUZ: Dr. Noon, Zenas B. (Nogales). Doctor Noon presented and read a most informative article dealing with medical education.

It was directed that the members selected (as listed above) be contacted by letter, informing them of their appointment to membership on the subcommittee on Careers to serve as the Executive body of the group.

Government Medical Staffs

William G. Payne, M.D., chairman, presented and read the contents of a letter dated December 10, 1959, signed by the president, Kent O. Hanson, M.D., and the secretary, John F. Kahle, M.D., of the Coconino Medical Society expressing the concern of the doctors comprising that Society regarding the operation of the Navajo Ordnance Depot Hospital, located approximately twelve miles west of Flagstaff off Highway 66. It appears that the Medical Staff of this installation comprising three doctors of medicine on active duty in the Medical Corps of the Army of the United States, two enlisted men and four other Army officers, are serving the medical needs of the military personnel but, in addition, are providing medical care for over four hundred civilian civil service employees and their dependants working at N.O.D. Inasmuch as there exists adequate hospital facilities and civilian medical personnel serving this area in Flagstaff, it is the desire to effect the discontinuance of providing medical and hospital services to civilian personnel by the military forces. Doctor Payne reported that, while his subcommittee has not to date held a formal meeting, an investigation is proceeding. Discontinuance of these services to civilian personnel must be effected at the top level in Washington. This can best be approached through contact with our Congressmen, and possibly Senator Barry Goldwater could be interested to develop the facts.

IT WAS MOVED by Doctor Payne, seconded by Doctor Bean and unanimously carried that the committee recommend to the Board of Directors that a memorial be prepared and forwarded to the appropriate designated authorities protesting the current practice of using military personnel and facilities to hospitalize and medically treat civilian civil service employees of the Navajo Ordnance Depot.

Nurses

Francis J. Bean, M.D., chairman, reported that while his subcommittee has held no actual meeting, the majority of its members were present at a special meeting of the Board of Directors of this Association held 12/13/59, called to meet with members of the Arizona State Nurses Association and the Arizona Federation of Licensed Practical Nurses. Only members of the latter group attended, the registered nurses having conflict with a previously scheduled meeting of their own. It was determined by the Board at the conclusion of this meeting that the subcommittee on Nurses review the entire matter, meeting with representative groups of each of these bodies, as said subcommittee may determine wisdom and report back to the Board through the Professional Liaison Committee. This directive was just recently received by the subcommittee.

Doctor Bean is of the opinion that there are certain subjects of mutual interest which could profitably be discussed by representatives of both these organizations, and an effort should be made to bring this about. It is anticipated each of these groups will welcome the opportunity to confer with medicine. Some of the subjects requiring discussion were outlined as follows:

1. Present trends in education of nurses.
2. Sources of supply of nurses; recruitment programs.
3. Recognition by the medical profession of different categories of nurses.
4. Programs and activities of Arizona State Nurses Association as they relate to physicians.
5. The position and activities of the economic counselor of the Arizona State Nurses Association.
6. Public Health nursing needs.
7. School nursing programs.

It is believed desirable that the Board of Directors correspond with the Arizona State Nurses Association, informing them of the opportunity to meet with this subcommittee for the purpose of discussing problems of mutual interest; further, that the Arizona League of Nursing be included and similarly so informed, as should also be the Arizona Federation of Licensed Practical Nurses.

IT WAS MOVED by Doctor Frissell, seconded by Doctor Young and unanimously carried that the report of Doctor Bean be accepted.

Physicians and Surgeons Association

In the absence of Lavern D. Sprague, M.D., chairman, there was presented and read his written report:

"The object of the subcommittee for the present year will be the adoption of a resolution by The Arizona Medical Association along the lines of the resolution originally adopted by the Medical Association of the State of Maryland, providing for limitation of federal medical care of all veterans to service-connected disabilities. A copy of these recommendations has been forwarded to all state medical societies and to the A.M.A. by the House of Delegates of the Maryland Association in the past. They are anxious to get considered action by all state medical societies so that there will be a reasonable chance of obtaining a Congressional hearing before the House Veteran's Affairs Committee during this Session. All members of the subcommittee have received extensive literature concerning this problem, but we have not as yet met formally for discussion. A meeting is planned for the near future."

IT WAS MOVED by Doctor Young, seconded by Doctor Bean and unanimously carried that the report of Doctor Sprague be accepted.

Public Health

Ben P. Frissell, M.D., chairman, reported that the subcommittee on Public Health was created as a part of the Professional Liaison Committee of The Arizona Medical Association, Inc. as a result of a resolution passed at the last annual meeting of the Association.

The functions of the subcommittee are twofold:

1. To work in closer liaison with the Public Health Department in order to avoid misunderstandings between the various County Societies and the Department.

2. To work toward development of a better Public Health program in the State.

Two formal meetings have been held by the subcommittee on November 8, 1959 and January 31, 1960. In addition, there has been much communication between members of the subcommittee by correspondence, telephone and personal visits, etc.

One of the first problems considered by the subcommittee was the dissatisfaction in certain segments of the Association over the problem of the multiphasic screening program being carried out currently by the State Department of Health, particularly as it pertains to Diabetes. Representatives from the subcommittee and other interested physicians have consulted with the County Societies in two areas and held open discussion of this problem. To date nothing more than an airing of views and opinions has been accomplished but it is hoped that in the overall effort the problem may be resolved. We have a communication from The American Medical Association on this problem. It does not bring out any firm policy at the national level; it appears that in some areas of the country the programs are well received, while in others the doctors are opposed to it. A copy of a letter from Doctor Francis D. L. Lukens is on file for reference. Doctor Lukens, president of the American Diabetes Association, is writing in reply to a letter of inquiry addressed by Doctor Eleanor Waskow at the suggestion of the subcommittee chairman. In essence, Doctor Lukens' letter brings out the fact that it is the policy of the Diabetes Association on a national level to cooperate closely with the Public Health service in conducting surveys and that they feel that this is, for the most part, the manner in which the problem should be handled at the local level. It is the hope of the subcommittee on Public Health that our problem may be handled eventually by more active leadership and participation on the part of the local doctors with the cooperation of available Public Health resources.

In our efforts to assist the State Health Department, it was our agreement at the first meeting of the subcommittee that the most urgent problem facing the State Department of Health is the replacement of the present Commissioner by the time of his retirement in April, 1961.

It was felt that immediate steps should be taken to place this matter before the Legislature at its January, 1960 Session in such a manner that the statute pertaining to the salary limitations and qualifications for the Commissioner should be altered. After consultation with the Governor's office, the legal counsel of the Association, several qualified Public Health persons and a review of model Public Health legislation, a rough draft of a bill to change the existing statute was drafted by Mr. Robert Carpenter (to establish the salary of the Commissioner, not to exceed $17,500 per annum, to be determined by the State Board of Health, subject to legislative appropriation; and to further elaborate upon qualifications for such position to the effect that, among other things, a Commissioner "shall have at least one year of graduate study in a school of public health approved by the Council on Medical Education and Hospitals of the American Medical Association or its successors" and "shall have had no less than three years' experience in administrative practice as a full-time public health officer") and turned over to the Legislative Council of the Legislature. A copy of this legislation is on file for reference. The strategy followed by the subcommittee in following through on this situation to date has been largely laid down by Mr. Frank Snell. The approach has been on an informal basis. Members of our subcommittee, together with other interested State Association officers and members, including Doctor Reed Shupe of the Legislative Committee, have met on several occasions with key members of the Legislature, particularly chairmen and vice-chairmen of the Appropriations and Public Health Committees of both the House and Senate. Likewise the personal support of Association members who have personal acquaintance with key legislators has been enlisted by letter and the response in practically all instances has been excellent. An attempt has also been made by the subcommittee to appraise the leaders of the House and Senate in both the Committees of the dire need for more liberal treatment of the appropriation needs of the Department in order to hold key personnel and to improve the functions of the Department.

Although it is early to assess the results of these efforts, we are encouraged to feel that some progress has been made. The reception of our members by the political bodies has been in all instances courteous and friendly. We have been asked on several occasions to meet with the Board of Health, the last such meeting was on February 4, 1960 at the request of a Subcommittee of the Senate Appropriations Committee treating specifically the problems of the Public Health Department.

With respect to the future functions of the subcommittee on Public Health, we offer the following:

1. We feel that the need for closer and continued liaison between The Arizona Medical Association and the Department of Health is well established. To accomplish this end, it is suggested that each County Society be urged to appoint a Public Health Committee, or at least one interested member depending on the local situation, which would meet from time to time with the local Board of Health if available (otherwise, the State Department of Health) about matters pertaining to local issues. In turn, each County have a representative of this group to meet with the State Subcommittee on Public Health on at least a biannual basis. One of these meetings could coincide with the annual Association meeting; the other approximately 6 months later. We have every reason to believe at this time that our efforts are well received by the State Health Department and by the State Board of Health, and it is anticipated that close relationships be maintained between the subcommittee and these agencies.

2. We feel that there is a need to encourage and promote the development of more local or district Health Departments in the various areas of the State not now provided with adequate Public Health facilities.

3. There is need for disseminating more information to the doctors of the State on Public Health needs and problems. It is suggested that perhaps a Public Health section be set up in "Arizona Medicine" or at least periodic articles pertinent to Public Health should be published in this vehicle.

4. It is a recommendation of this subcommittee that doctors of the State at a community level need to assume more active leadership in Public Health problems affecting the various communities; using as an example the Polio vaccination programs, etc., which need the leadership of physicians rather than lay groups. In these endeavors, it is hoped that local Public Health facilities will be tied into the program wherever possible.

5. We stress the need for a well-integrated school health program. It is hoped that this subcommittee may work in close cooperation with the Association Committee on School Health in an attempt to put into effect an adequate program under sponsorship of the State Department of Health.

6. Inasmuch as the major legislative effort of our Association will of necessity be directed in Public Health fields, we hope to lend our efforts whenever possible to the Legislative Committee.

There is need for an overall revision of the Public Health statutes of the State which are agreed to be weak and ambiguous in many respects. Careful study by experts in law and Public Health will be required for this effort.

7. Likewise there is the need for a Public Health survey to pinpoint the current Public Health needs for the various segments of the State. The last survey was made approximately 5 years ago by the U. S. Public Health Service. Due to the unprecedented growth of the population of the State in the past decade, it would appear to the subcommittee that such a survey should be repeated in the next 1-2 years.

8. It is the feeling of this subcommittee that the Dental Association, which has been quite active in Public Health effort the past few months, should be included in our program. Steps have already been taken in this direction with two meetings being held with representatives from the Dental Association these past few months.

9. Last but not least, it is felt that our efforts on behalf of the Public Health Department should be shared with other responsible lay groups and health organizations (PTA, Federation of Women's Clubs, Heart, Cancer and TB Associations, etc.)

IT WAS MOVED by Doctor Cummings, seconded by Doctor Smith and unanimously carried that the report of Doctor Frissell be accepted.

Doctor Melick stated that Doctor Frissell has kept in close contact with him in carrying out the objectives of his subcommittee assignment, commending Doctor Frissell for his accomplishments to date.

Schools

Noel G. Smith, M.D., chairman, reported on the activities of his subcommittee on schools, pointing up the activities of the State Advisory Committee on School Health. This Committee is composed of the various representatives comprising the State Department of Public Instruction; State Health Department; State Medical Association(?); State Dental Association; Division of Indian Health, U.S.P.H.S.; Bureau of Indian Affairs; State Nurses Association; University of Arizona; Arizona State University; State Congress of Parents and Teachers; State School Administrators Association; State voluntary health agencies; the Tucson-Glendale and Phoenix Union High School and elementary systems, and others. Generally, its objective is to explore and study school health problems and recommend approach in resolving the issues in an advisory capacity.

IT WAS REGULARLY MOVED by Doctor Young, seconded by Doctor Frissell and unanimously carried that it be recommended to the Board of Directors that this Association be officially actively represented on the State Advisory Committee on School Health, and that Noel G. Smith, M.D., chairman of the subcommittee on Schools of the Professional Liaison Committee be designated such representative.

The State Congress of Parents and Teachers, in cooperation with the State Advisory Committee, has endorsed the project and will work through the State P.T.A. in arranging a series of community meetings on school health in the year ahead leading toward the recommended employment of a state school health coordinator as one possible step toward solving some of the urgent needs outlined. Consideration of (a) School Health Workshops, (b) College-level Health Courses for Teachers, (c) Health Education Courses at Pre-Secondary and Secondary level, (d) Coordinating Committee on School Health reactivation, (e) Revision of the School Health Handbook, and (f) Special Reports and Surveys on School Health in Arizona, are listed among the needs for early review.

A "Report of School Program Survey" made by the State Advisory Committee was reviewed and discussed. Its conclusions and recommendations drawn appeared to be in accord with the ideas of this subcommittee.

Considering the details of School Health Services, following are the recommendations therefor as they may apply to the State of Arizona. Such services in all cases should be designed to protect pupil health, to promote the maximum emotional, mental, and physical health of the child in order that he may most effectively function during the school day, and based on accepted standard, adaptability of plan to community of operation and influenced by local custom, professional personnel and other services available. They are:

A. Determination of Health Needs.

1. Complete health examination by the Family Physician in his office of all children starting school for the first time, to include: (a) complete medical history; (b) thorough physical

examination; (c) counseling on adjustments to be made by the child starting school; and (d) recommendations for correction of abnormalities, and any special instructions with regard to safeguarding the child in his new school environment. Completeness of the child's immunization program should also be certified. All this should be compulsory prior to admission.

All children entering high school for the first time should have the same type of examination.

Referral examinations to be conducted by the Family Physician to check some suspected deviation from normal health, picked up through screening examinations, teacher observations, nurses' judgments, and school physicians' recommendations.

2. The importance of continuing observations by teachers who understand how children and youth grow and develop and who know the appearance and behavior characteristics of health cannot be overemphasized. Each school should provide opportunities for teachers to improve their observational abilities, using the health resources of the community.

3. Screening tests carried out by teachers, nurses, technicians, and certain volunteers under the instruction and supervision of the school physician to include (a) periodic measurement of height and weight, three yearly at the beginning, middle and end of each school year, the records to be kept on one of the available growth charts to remain a part of the child's accumulative health record; (b) vision tests made with the Snellen chart to be conducted annually, this supplemented by continuous observation of pupils' appearance and behavior; and (c) hearing tests given annually in elementary schools, and every two years in secondary schools, preferably with a pure tone (discrete audiometer).

4. Dental health and dental examinations. Recommendations to be forthcoming from the Arizona Dental Association.

5. Psychological examinations administered by an adequately organized child guidance service are often helpful in evaluating the total health and personality patterns of a child. Medical supervision and psychiatric consultation essential whenever emotional difficulties or mental disease are involved.

6. Health records should be standardized and cumulative from grade to grade and follow the child from school to school as does his scholastic record.

B. Follow-up and Interpretation.

Follow-up requires proper interpretation of health conditions to pupils and parents and to teachers and administrators, and effort to help children secure treatment or other needed attention for health problems, a most important aspect of school health services. It involves utilization of all community resources, a procedure that is facilitated by good communication between school personnel, parents, practitioners of medicine and dentistry, and community agencies.

C. Care of Emergency Sickness or Injury.

Every school should have a planned written program for the care of emergencies. In case of accident or sudden illness the school has responsibility for giving immediate care, for notifying parents, for getting children home or some other place of safety, and for guiding parents, where necessary, to sources of treatment. Everyone on school staff should have the skills and understanding necessary to administer first aid.

All children starting school should have a certificate from their Family Physician that their immunization records are in order and up-to-date as outlined by the American Academy of Pediatrics; that a Mantoux test has been performed, and if positive, that necessary examination including chest X-rays, sputums, if indicated, to insure that the child does not have active tuberculosis.

Booster injections and re-vaccinations should be insisted upon at appropriate intervals and can best be given by the Family Physician.

Specific preventive treatments are best administered by the Family Physician in his office in conjunction with the early supervision of a child's health. Local customs or medical opinion may encourage administration of booster injections in the school or at the health department, but every effort must be made to discourage postponement of primary immunization until school entrance.

Notification of parents and physicians if child is exposed to a contagious disease so that appropriate preventive treatment can be instituted.

While the common cold is an especially difficult communicable disease problem, its vague symptomatology simulates the early manifestations of many more serious diseases, such as rheumatic fever and pneumonia. Although it is impracticable to exclude from school every pupil who exhibits signs and symptoms of a common cold, parents should be encouraged to keep pupils at home when they exhibit genuine signs or symptoms of a beginning of a severe cold, and they should be excluded from school.

Control of communicable disease in schools is sometimes hampered by placing false emphasis on perfect or near-perfect attendance. Rather than giving certificates or awards for perfect attendance, commendation should be given to pupils who protect the health of their classmates by remaining home when not well. Allotment of state funds to local schools on the basis of the average number of pupils in daily attendance is equally bad practice, because it makes teachers anxious to force attendance on pupils who ought better be at home and in bed.

Contrary to popular beliefs, epidemics occurring in communities having well-organized, efficient public health facilities usually can best be controlled if schools remain open but take special precautions, including regular daily inspections and continuing observations of all children.

It is the hope these recommendations, set forth in more detail in the report, can be approved by the state Medical Association and that in cooperation with the State Advisory Committee on School Health, we can move forward in an attempt to present this program to school administrators and gain their cooperation in facilitating the adoption of a unified program throughout the State. It was further the hope that we participate in the planning of a 3-day workshop program for school administrators to be scheduled in August of this year, at which time they will be oriented in this program.

IT WAS MOVED by Doctor Payne, seconded by Doctor Frissell and unanimously carried that Doctor Smith's report be accepted.

Woman's Auxiliary.

In the absence of Robert E. Hastings, M.D., chairman, Doctor Steen presented the following written report summarizing the results of a survey recently undertaken and completed by the special committee of the members of the Woman's Auxiliary:

"1. College Degree Program of Nursing:

Both the University of Arizona and Arizona State Universities now have a School of Nursing which offers a four-year program leading to a Bachelor of Science in Nursing. After careful consideration of both schools, it was felt that there was a need for loans for deserving girls primarily in their junior and senior years.

2. Medical Technology:

There is also a Medical Technology program offered at both Universities which leads to a Bachelor of Science degree in Medical Technology. If a loan was offered in this field, the committee advised that it be done at the sophomore or junior level as the student works in an approved hospital laboratory his last year and is paid a salary.

3. Practical Nursing:

The S. H. Kress School of Practical Nursing at the Pima County Hospital in Tucson and the Practical Nursing course taught at the Vocational-Technical division of Phoenix Union High School were investigated. The committee did not feel there was enough need at either of these schools for us to consider them.

4. Phoenix College School of Nursing:

This is a new school, having been started in 1959. It is a two-year curriculum qualifying the graduate to take the Arizona State Licensing Examinations for the Registered Nurse (R.N.). Since this is such a new and unproved school the committee felt it would be wise to wait until it is better established before giving it serious consideration.

5. X-Ray Technology:

Curoses in X-Ray Technology are offered at St. Mary's Hospital in Tucson; St. Joseph, Good Samaritan and Memorial in Phoenix. As there is no tuition involved, the committee did not think our help would be of benefit in this field.

6. Occupational Therapy, Physical Therapy, Dietetics, Medical Records and Medical Social Work:

These were all investigated. All graduate work and internships in these fields have to be done out of the State.

Extension of the Student Nurse Loan Fund program to include students in paramedical fields was referred last year to the Woman's Auxiliary by the Board of Directors for investigation and recommendation. This report is presented by Mrs. Hiram Cochran, president of the said Auxiliary, and its committee feels that the excellent work and accomplishments in regard to the Student Nurse Loan Fund for the past nine years should be continued, but that at this time we might also consider the fitness of including the graduate nursing course definitely, and possibly the medical technology course if finances permit. It is not felt at this point that the Auxiliary is large enough and financially strong enough to commit itself further."

Doctor Hastings advised that his committee feels they ought not to, and that the Auxiliary desires to be so informed.

It was further pointed out that at Arizona State University a two-year nursing school course, affiliated with the Maricopa County General Hospital, Phoenix, has been established with the support of the Maricopa County Medical Society. Question has been raised as to whether or not the Auxiliary program should include such students. It is the general feeling that they should not at this time.

IT WAS MOVED by Doctor Bean, seconded by Doctor Young and unanimously carried that the report of Doctor Hastings be accepted.

It was reported that Dennis Bernstein, M.D., of Tucson, declined acceptance of appointment to membership on this subcommittee.

Lorel A. Stapley, M. D.
Secretary
by ROBERT CARPENTER
Executive Secretary

LETTER TO THE SECRETARY

February 2, 1960

Lorel A. Stapley, M.D.
Secretary
The Arizona Medical Assn., Inc.
1021 Central Towers Bldg.
Phoenix, Arizona

Dear Doctor Stapley:

This is to thank you for your letter of January 26th, in which you reiterated the position taken by the membership of the Arizona Medical Association in opposing the so-called Forand Bill.

It will not receive my support.

I do not favor socialism in any form and believe that this type of legislation can only add to the Federal assessments already imposed on our overburdened taxpayers.

Yours sincerely,
JOHN J. RHODES

LETTER TO THE SECRETARY

February 10, 1960

Dr. Lorel A. Stapley, Secretary
The Arizona Medical Association, Inc.
1021 Central Towers Building
Phoenix, Arizona

Dear Dr. Stapley:

I appreciate your letter of January 26 informing me that the Board of Directors of the Arizona Medical Association, Inc., has again voted to oppose the enactment of H. R. 4700.

Actually, so far as I am concerned, there has been very little action on this legislation since last year in that the House Ways and Means Committee has not processed this bill nor made any report to the House on it.

The best information available here is that action at this session of Congress is unlikely. Judging by my mail, however, the problem of adequate medical care for our retired citizens is a very real and urgent problem and it would seem to me that the best way to head off legislation such as H. R. 4700 would be for the medical profession working closely with the insurance industry to come up with new programs which will meet the needs of these citizens. I hope you people will devote much careful time and creative effort to this challenge in the months ahead.

Sincerely,
STEWART L. UDALL

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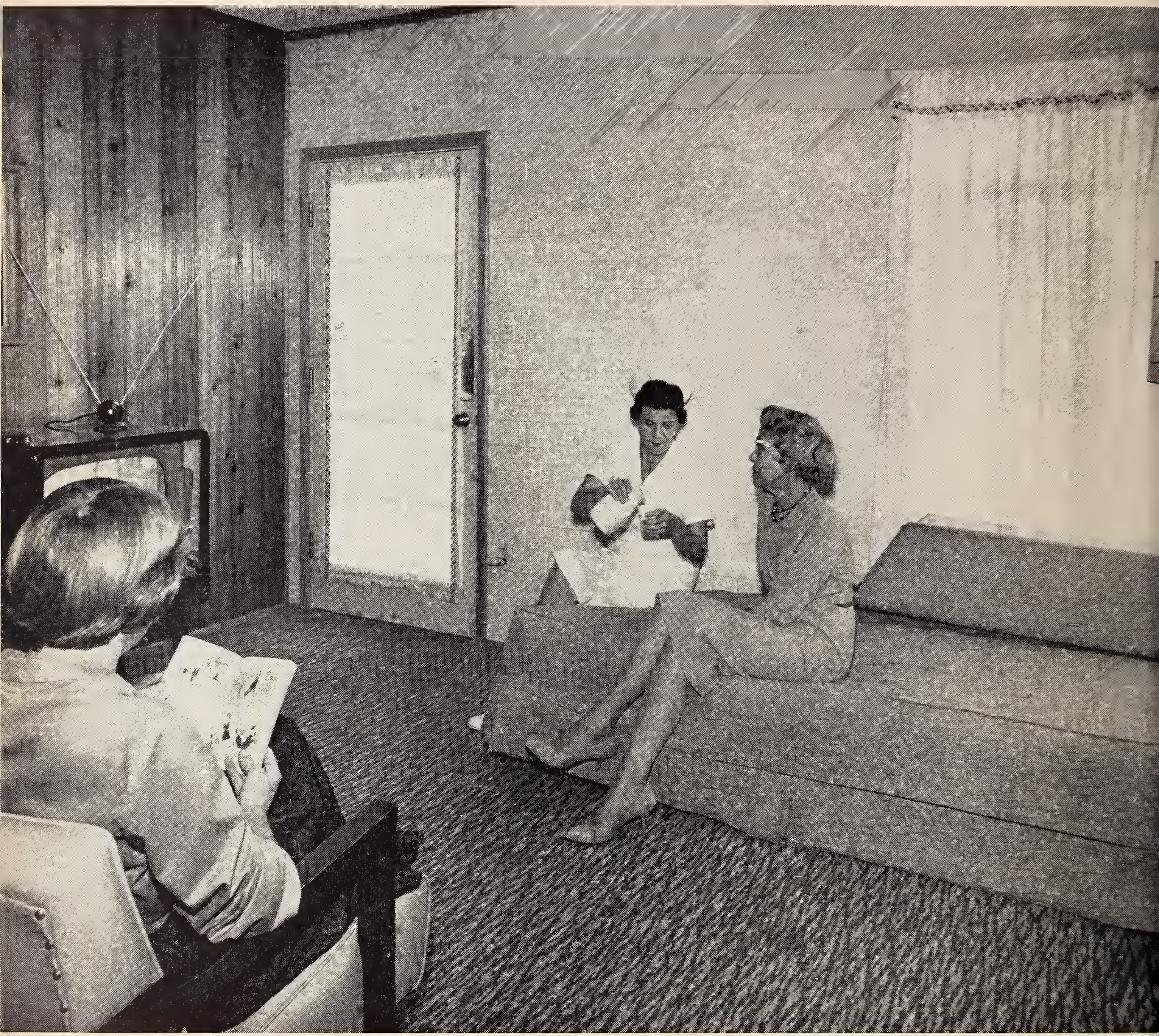

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PHOENIX, ARIZONA
OTTO L. BENDHEIM, M.D., F.A.P.A., MEDICAL DIR

Topics of Current Medical Intrest

ARIZONA POISONING CONTROL INFORMATION CENTER

SAFETY CLOSURE FOR MEDICINAL CONTAINERS

Accidental poisoning from drugs involving preschool-aged children is a frequent occurrence. It has been stated that one-third of the deaths from poisoning result from the accidental ingestion of medicinal agents(1). Several reports in the literature testify to the high incidence of poisoning from drugs. A publication by Cann and Associates(1) of the National Clearinghouse for Poison Control reveals that 55% of 3926 cases of poisoning reported by 29 poisoning control centers involved ingestion of medicinal agents.

In the state of Arizona during 1959, 61% of 1154 cases of poisoning reported by the Arizona Poisoning Control Treatment Centers were caused by drugs. The majority of these cases involved children 1 to 5 years of age. Aspirin and other salicylates comprised 25% of the total number of cases, while the remainder involved "over-the-counter" and prescription drug items.

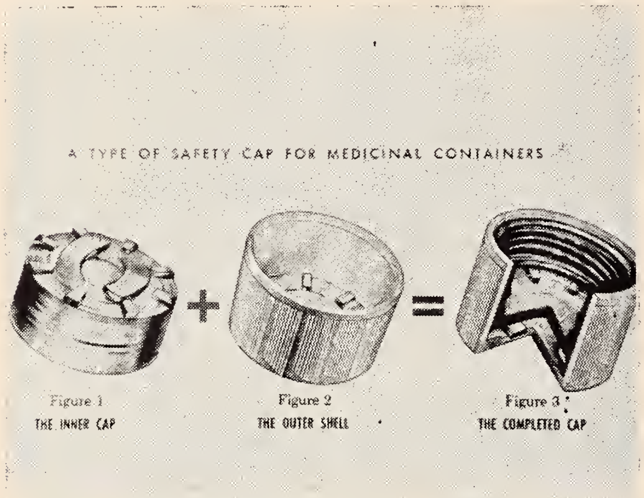
Since most of the cases of accidental poisoning from medicinal agents occur because of improper storage, administration, and disposal of these chemical agents in the home, it is frequently emphasized that public education is the most important means for preventing these accidents. Another preventive measure which deserves more attention is the use of safety closures on containers for packaged and prescribed medications. The adoption of an effective safety closure of some type for all drug containers found in the home has been highly recommended as a measure to reduce the morbidity and mortality from accidental ingestion of potentially dangerous drugs(1, 3).

Several ingenious types of safety closures have been described in the literature(1, 4) but most of these have been adapted to packaged aspirin containers. Recently, a novel safety cap designed for liquid as well as for tablet prescription containers has been made commercially available. This safety cap is constructed in 2 pieces. As shown in Fig. 1, it consists of an inner plastic (clear) cap which is threaded to seal the bottle in the conventional manner. Located in the top of this inner cap are 8 fixed plastic locking lugs and 2 elevated plastic prongs which serve as springs. A cardboard sealer disc is positioned inside of the cap which, in this respect, resembles the conventional screw cap. (Cardboard sealer is not visible in figures.)

The second part of the safety cap consists of an outer white plastic shell which fits over the inner plastic cap. Eight locking lugs are located on the inside of this shell (See Fig. 2) and are similar to the lugs found on the inner cap described above. As shown in Fig. 3, when the inner cap and the shell are assembled they appear as one ordinary cap.

When the safety cap is in place on the bottle, the outer shell is free to turn completely around the iner cap without changing the position of the latter on the bottle. To remove the cap, a downward pressure is exerted on it and in so doing the 2 plastic prongs on top of the inner cap are repressed allowing the locking lugs on both inner cap and outer shell to become engaged. As the downward pressure is applied, the cap is removed with a counter-clockwise motion in the usual manner employed when removing an ordinary screw cap (See Fig. 4). Replacement of the safety cap on the bottle involves the reversal of the above procedure, since the cap is turned in a clockwise direction on the bottle while applying a downward pressure to the cap (See Fig. 5). The directions for removing and replacing the cap are imprinted on the top of each safety cap.

The objective of the above safety closure takes into consideration the short attention span of a child. Since the white shell portion of the cap simply revolves freely when the child attempts to remove the cap, continued interest by the child for removing it usually wanes. Furthermore, most children are not capable of determining the proper combination for removing the cap, namely, that of applying a downward pressure in addition to the correct turning motion of the cap. A consumer survey involving 449 children in 4 cities in the United States has indicated that a total of 435 children could not open containers equipped with this safety closure(5).

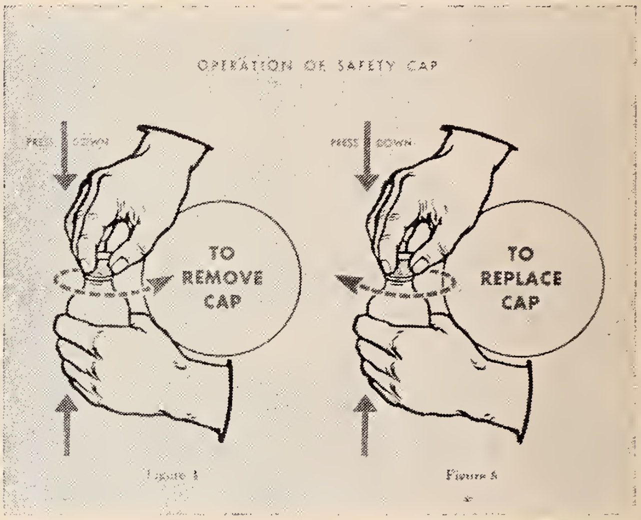


The safety cap described above is manufactured by the Brockway Glass Company, Brockway, Pennsylvania. At present it is available on 3 and 4 ounce clear-glass flint prescription ovals for liquid medication and on both amber and clear-glass 5 dram vials for capsules and tablets. The Brockway Glass Company plans to use the safety cap on their prescription containers of all sizes if this innovation is acceptable to the public(5). The cost of these safety cap containers to the pharmacist is only 25-29% more than the conventional screw cap on the same type bottles. It would appear that the added cost of these containers would be offset immeasurably by the part that they would play in the prevention of accidental poisoning in children.

The Arizona Poisoning Control Information Center has been informed that these safety cap prescription containers are available to pharmacies in Arizona through the usual wholesale drug channels.

Poisoning From Household Ammonia Solution

Although it is unlikely that household ammonia solution may be accidentally ingested because of its highly irritating vapors, it appears, nevertheless, worthwhile to call attention to this product as a potential source of corrosive poisoning, particularly in view of its common use in the household as a cleaning agent and in view of a recent clinical publication on its toxicological hazards. Household ammonia solution usually contains approximately 30%, weight to volume, of ammonia (NH_3)(6). It is highly alkaline and upon ingestion produces symptoms and local tissue damage similar to those caused by the ingestion of lye. For example, the report mentioned above(7) describes two cases in which household ammonia solution was intentionally ingested in amounts of approximately 240 ml and 200 ml. The patients exhibited bloody vomits and complained of chest pains when they were initially observed at the hospital. Inflammation of the oropharynges was also noted. Later consequences of poisoning by the corrosive included esophageal stricture and gastric stricture, particularly in the region of the antrum. Thus, the Arizona Poisoning Control Information Center



suggests that the ingestion of ammonia solution should be treated in a manner identical to the treatment of lye ingestion, as described in previous APCIC News Bulletins, December 1957 and September 1959 or in *Arizona Medicine*(8, 9) (i.e., dilute the alkaline corrosive with large amounts of water, milk, orange juice, lemon juice, or dilute vinegar; give demulcents; administer analgesics – demerol, 50 to 100 mg i.m.; treat for shock; administer adrenocortical steroids and broad spectrum antibiotics; and avoid emetics or gastric lavage).

Convulsions From Repeated External Application Of Diamthazole (Asterol)

Diamthazole (Asterol) dihydrochloride is an antifungal agent which is effective in the treatment of athlete's foot and other fungus infections of the skin, hair, and nails. It is marketed as a 5% powder, a 5% tincuture, and a 5% ointment. These preparations bear a caution legend and are available only on prescription from a physician. The potential neurotoxicity of diamthazole, especially in infants and very young children, has been recognized for a number of years(10, 11, 12, 13) and the central nervous system symptoms which may result from the percutaneous absorption of the drug are described in New and Nonofficial Drugs(14). These symptoms may include ataxia, tremors, convulsions, hallucinations and behavior changes. Because of the possible consequences which may arise from the application of diamthazole on children, it is suggested that this drug should not be used on infants or persons under six years of age and that it should be employed cautiously in the treatment of individuals 6 to 12 years old(15). The above warning is supplied with each container of the medication, but the warning is not arranged for convenient routine transfer to the patient. Hence, patients or parents are unlikely to be uninformed by the pharmacist of the cautionary measures in the use of this agent in children unless he knows that the patient is very young. Recently, Morton(16) reported a case in which a physician treated a 4-week-old girl for ringworm. Diamthazole was applied three times daily to the face, scalp, and body of the infant. After one week of such treatment the patient exhibited convulsions which were controlled with paraldehyde and barbiturates. It is the opinion of Dr. Morton that this incident might have been avoided had the child's age appeared on the prescription, since the pharmacist would then serve as an additional safeguard. She enjoins fellow pediatricians to encourage their colleagues in other fields to include the age of their child patients on prescriptions for medication.

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STATISTICS OF 61 POISONING CASES IN ARIZONA DURING JANUARY 1960

AGE:

69.0%	involved under 5 year age group	(42)
1.6%	involved 6 to 15 year age group	(1)
16.3%	involved 16 to 30 year age group	(10)
4.9%	involved 31 to 45 year age group	(3)
4.9%	involved over 45 year age group	(3)
3.3%	age not reported	(2)

NATURE OF INCIDENT:

82.0%	accidental	(50)
18.0%	intentional	(11)

OUTCOME:

100.0%	recovery	(61)
0.0%	fatal	(0)

TIME OF DAY:

39.4%	occurred between 6 a.m. and noon	(24)
26.2%	occurred between noon and 6 p.m.	(16)
13.1%	occurred between 6 p.m. and midnight	(8)
3.3%	occurred between midnight and 6 a.m.	(2)
18.0	time of day not reported	(11)

CAUSATIVE AGENTS:

	Number	Percent
Internal Medicines		
Aspirin	16	26.2
Other Analgesics	3	4.9
Barbiturates	10	16.4
Antihistamines	3	4.9
Laxatives	4	6.6
Cough Medicine	2	3.3
Tranquilizers	0	0.0
Others	7	11.5
Subtotal	45	73.8
External Medicines	0	0.0
Household Preparations		
Soaps, Detergents, etc.	0	0.0
Disinfectants	3	4.9
Bleach	2	3.3
Lye, corrosives, drain cleaners	2	3.3
Furniture and floor polish	0	0.0
Subtotal	7	11.5
Petroleum Distillates		
Kerosene	1	1.6
Gasoline	0	0.0
Others	0	0.0
Subtotal	1	1.6
Cosmetics		
Pesticides		
Insecticides	1	1.6
Rodenticides	0	0.0
Others	0	0.0
Subtotal	1	1.6
Paints, Varnishes, Solvents, etc.	1	1.6
Plants	0	0.0
Miscellaneous	4	6.6
TOTAL	61	100.0

STATISTICS OF 1154 POISONING CASES REPORTED IN ARIZONA DURING THE YEAR JANUARY 1 - DECEMBER 31, 1959

AGE:

72.8% involved under 5 year age group (850)
3.6% involved 6 to 15 year age group (42)
8.4% involved 16 to 30 year age group (97)
5.6% involved 31 to 45 year age group (65)
5.5% involved over 45 year age group (64)
3.9% were not reported (46)

NATURE OF INCIDENT:

86.8% accidental (1002)
13.0% intentional (150)
0.2% were not reported (2)

TIME OF DAY:

31.3% occurred between 6 a.m. and noon (362)
33.1% occurred between noon and 6 p.m. (382)
19.4% occurred between 6 p.m. and midnight (224)
2.9% occurred between midnight and 6 a.m. (34)
13.2% were not reported (152)

OUTCOME:

99.2% recovery (1145)
0.6% fatal (7)
0.2% were not reported (2)

CAUSATIVE AGENTS:

	Number	Percent
Internal Medicines		
Aspirin	291	24.9
Other Analgesics	33	2.8
Barbiturates	133	11.4
Antihistamines	31	2.7
Laxatives	26	2.2
Cough Medicine	11	1.0
Tranquilizers	42	3.6
Others	104	8.9
Subtotal	671	57.5
External Medicines		
Liniment	10	0.9
Antiseptics	21	1.8
Others	6	0.5
Subtotal	37	3.2
Household Preparations		
Soaps, Detergents, etc.	14	1.2
Disinfectants	13	1.1
Bleach	22	1.9
Lye, corrosives, drain cleaners	29	2.5
Furniture and floor polish	15	1.3
Subtotal	93	8.0
Petroleum Distillates		
Kerosene	29	2.5
Gasoline	27	2.3
Others	23	2.0
Subtotal	79	6.8
Cosmetics		
Pesticides		
Insecticides	63	5.4
Rodenticides	2	0.17
Others	8	0.69
Subtotal	73	6.3
Paints, Varnishes, Solvents, etc.	46	3.9
Plants	36	3.1
Miscellaneous	77	6.6
Unspecified	27	2.3
TOTAL	1165*	100.0

*The total number of causative agents exceeds the actual number of poisoning cases since in certain individual poisoning incidents more than one agent was involved.

WILLIS R. BREWER, Ph.D.
Dean, College of Pharmacy
The University of Arizona
ALBERT L. PICCHIONI, Ph.D.
Pharmacologist and Director
Arizona Poisoning Control Program
LINCOLN CHIN, Ph.D.
Pharmacologist

BOARD OF MEDICAL EXAMINERS

The Board of Medical Examiners of the State of Arizona at a regular meeting held Saturday, January 16, 1960, issued certificates to practice medicine and surgery in this state to the following doctors of medicine:

Abbott, James Allen (P), 1012 Kales Building, Detroit 26, Michigan

Barrier, Jr., Charles Wesley (N), 2409 East Adams, Tucson, Arizona

Bernasconi, Ezio Joseph (Oph), 726 Broad Street, Providence 7, Rhode Island

Bethune, Donald Stimson (ObG), 421 Huguenot Street, New Rochelle, New York

Branin, Howard Scull (PH), Maricopa County Health Department, Phoenix, Arizona

Bryan, Robert James (GP), 1002 Lincoln Way West, South Bend, Indiana

Di Censo, Sabatino (GP), 212 N. Avenue, Los Angeles 42, California

Dulawa, Leopoldo Benigno (GP), 350 West Thomas Road, Phoenix, Arizona

Escobar, Hugo Rene (GP), 350 West Thomas Road, Phoenix, Arizona

Galt, Jabez (I), 510 Medical Arts Building, Dallas, Texas

Gerber, Edward Paul (Oph), USPH Indian Hospital, Fort Defiance, Arizona

Gerster, Josef Jacob (I), 3131 North 7th Avenue, Phoenix, Arizona

Gorton, Bernard Emmanuel (PN), Papago Medical Building, Scottsdale and McDowell Roads, Scottsdale, Arizona

Grossnickle, James Walter (GS), Rt. 2, Box 949, Winter Haven, Florida

Henrie, Joyce Elaine Rich (P), 1809 North 11th Avenue, Phoenix, Arizona

Hernried, Hans Peter (I), 31 West Camelback Road, Phoenix, Arizona

Hernried, Lucy Steinbach (A), 31 West Camelback Road, Phoenix, Arizona

Hughet, Keith Robert (Ind), 116 North Tucson Blvd., Tucson, Arizona

Jackson, Jr., Ralph Allen (I), 2065 Adelbert Road, Cleveland 6, Ohio

Jessen, Barbara Green (GP), 691 Salvatierra Street, Stanford, California

Kartchner, Mark M. (S), Indian Hills Service Hospital, Lawton, Oklahoma

Klipfel, Gerda E. (ObG), Maricopa County Hospital, Phoenix, Arizona

La Dage, Leo Henry (Pl-MaxS), 919 Pine Avenue, Long Beach 13, California

Marks, Jack Armin (P), 2500 East Van Buren, Phoenix, Arizona

Merkel, Richard Lawrence (ObG), 302 National Reserve Building, Topeka, Kansas

Miller, Jr., Alfred Frederick (Or), 461 West Catalina Drive, Phoenix, Arizona

Oakes, Harold Forest (GP), 22443 Welby Way, Canoga Park, California

Orth, John Stambaugh (Anes), USAF Hospital, Carswell AFB, Fort Worth, Texas

Pearson, Murble Henry (GS), San Antonio State Hospital, San Antonio, Texas

Rawson, Robert Davis (GS), 711 N. Country Club Road, Tucson, Arizona

Shaul, Jr., Arthur B. (R), Ashtabula General Hospital, Ashtabula, Ohio

Silverman, Jerome L. (GP-I), 2430 Cass Avenue, Tucson 15, Arizona

Tolone, Francesco Saverio (R), 2021 North Central Avenue, Phoenix, Arizona

Veit, Henry (P), 5836 W. Lisbon Avenue, Milwaukee 22, Wisconsin

Waltz, Paul Jones (GP), West Branch, Michigan

THE BEHAVIOR OF TUMORS IMPLANTED IN THE MOUSE TREATED WITH EXTRACTS FROM HIGHER PLANTS

The following is a brief abstract of one of the projects of medical interest being done at the University of Arizona in Tucson.

This project involves collection, extraction by aqueous and organic solvents processes, and submission of semi-solid and lyophilized extracts to the Cancer Chemotherapy National Service Center for screening against sarcoma, carcinoma and leukemia in mise. Active extracts are subjected to fractionation, isolation, re-evaluation, analysis and synthesis studies.

Sources of plants are the southwestern area of the United States and northern and central Mexico, and they are derived from a range of growing conditions varying from alpine to Sonoran desert and subtropical environments. Some data have been collected on the use of some of these plants employed by physicians and lay persons for cancer therapy and other medicinal purposes. To date 810 extracts obtaindef rom 450 different species of plants distributed among 90 families have been submitted. An attempt is being made to determine whether or not there is any correlation between certain families of plants and tumor inhibition.

Extracts which have passed enough of the sequences of antitumor tests to be labelled "active" and, therefore, to be considered worthy of analytical investigation are few in number, but sufficient to be encouraging. In several instances, these extracts do represent plant materials employed by the native peoples of the Southwestern United States and of Mexico for many generations. Such extracts are to be fractionated and isolates prepared for chemical analysis and further studies aimed at synthesis of chemotherapeutic products for cancer.

Support of this work carried on in the Pharmacy College at the University of Arizona has come from many contributors. The chief source of funds has been The University of Arizona followed by the Arizona Division of the American Cancer Society, an anonymous donor, the Upjohn Pharmaceutical Company, and The University of Arizona Alumni Association.

MARY E. CALDWELL, Ph.D.

Research Pharmacologist
The University of Arizona
College of Pharmacy

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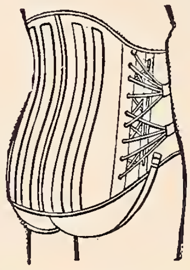

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Reprints

"THE RELATIVE VALUE SCALE"

Louis S. Wegryn, M.D.

The following is a condensation of the many sound and logical reasons why ethical physicians should determinedly and vigorously oppose the Relative Value Scale: *Relative Value Scale* will lead to (actually is, as soon as a conversion factor is applied) *fixed fees; it implies regimentation which denies freedom.* The *Scale denies the right of each physician to establish his own fee schedule.* The *Relative Value Scale* amounts to a *self-imposed regimentation* of physicians.

Relative Value Scale implies that all physicians are standardized – that all doctors are the same and none is better than the next. It would imply ridiculously that *all illness is standardized,* contrary to the traditional and undisputed principle that every case, every patient is singular; that his problem and the doctor's care is individual. *A patient or a disease is not a relative value. The Scale would give the enemies of medicine a weapon* by which freedom of medical care would be destroyed. It would *divide doctors into two classes*: Those charging above the scale and those below. Physicians would be stigmatized with being either inferior or superior and/or being "cheap" or a "fee gouger."

The *Scale would give to labor bosses,* government agencies, and other third parties, *a powerful weapon* which inevitably would be used by them to "bargain down" (never up) physicians' fees. This would be contrary to the ethics of medical practice because *physicians are morally bound to deal with the individual patient* and not bargain their services with third parties. Realistically, the Scale means that the "collective" is to tell every doctor what his services are worth. The *physician would be lead to shirk his responsibility* to state his value of his services. The *Relative Value Scale would cause conformity* which, unquestionably, would lead to *professional mediocrity.* This *dangerous device* for fixing fees would level physicians – the good and the bad – *to a plane of ordinary professional capacity.*

When the proponents of the Relative Value Scale vigorously proclaim that it is not a mechanism for fixing fees, the logical question should be: "Then, *what is the device for?*" There is utterly *no logical reason for assigning a "relative value" to almost every procedure* known in the practice of medicine. *Neither is there any public interest served. Standardizing* doctors, patients, diseases and treatments *will lead to the destruction of the system of private practice* that has provided the American people with the highest quality of medical care in the world, will demoralize medical public relations, deplorably weaken the initiative and professional excellence of physicians, and *cut a path to the slave state of socialism* where all will be doomed to suffer ignominiously.

Sincerely,
LOUIS S. WEGRYN, M.D.
President, AAPS.

*Editor's Note: The above reproduction is for information and does not necessarily express the opinion of the Editorial Board.

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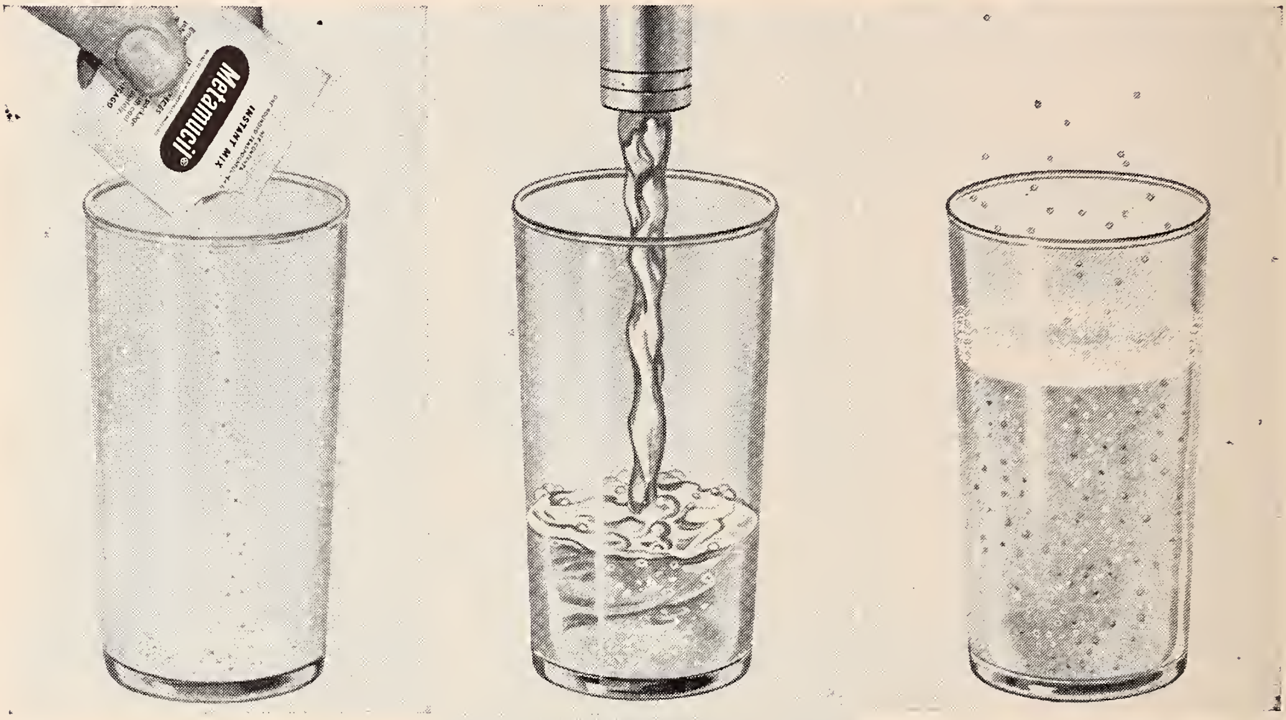

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Future Medical Meetings and Postgraduate Education

ARIZONA MEDICAL ASSOCIATION, INC.

SCOTTSDALE **MAY 4, 5, 6, 7, 1960**

69TH ANNUAL MEETING PROGRAM
THE ARIZONA MEDICAL ASSOCIATION, INC.

May 4, 5, 6, and 7, 1960

The Safari Hotel, Scottsdale, Arizona

WEDNESDAY, May 4th

8:00 A.M.	Board of Directors Meeting	The Kudu Room
12:00 Noon	Board of Directors Luncheon	The Garden Room
2:00 P.M.	House of Delegates, First Meeting	Convention Hall
4:00 P.M.	Reference Committee Meetings	Conference Room
6:30 P.M.	Reception	Pool Patio
7:30 P.M.	Chuckwagon Dinner	Pool Patio

THURSDAY, May 5th 1960

8:00 A.M.	FIRST SCIENTIFIC SESSION John R. Schwartzmann, M.D., General Chairman Breakfast Seminar, "Whiplash Injuries." Moderator: John R. Schwartzmann, M.D. Panel: John A. Eisenbeiss, M.D., Richard E. McGovern, M.D., Mr. Robert F. Miller, Edwin R. Schottstaedt, M.D., Louis Jolyon West, M.D.	Main Dining Room
9:30 A.M.	Intermission	Exhibit Tent
10:00 A.M.	Staphylococcal Infections in Childhood Harry Shwachman, M.D., Boston Moderator: Richard B. Johns, M.D. Discussants: Walter E. Ahrens, M.D., John S. Kruglick, M.D.	Convention Hall
10:30 A.M.	OPENING EXERCISES Call to Order: Dermont W. Melick, M.D. Invocation: Dean George Selway, Trinity Cathedral, Phoenix Welcome: W. Albert Brewer, M.D., President, Maricopa County Medical Society Response: Walter Brazie, M.D., President, Mohave County Medical Society Memorial Service: Dean Selway Introduction of the President Presidential Address: Lindsay E. Beaton, M. D. Presentation of the Honorable Paul Fannin, Governor of the State of Arizona	Convention Hall

11:00 A.M.	Regional Anesthesia Combined with Intramuscular Sodium Pentothal for the Pediatric Orthopedic Patient Kenneth K. Keown, M.D., Columbia, Mo. Moderator: Richard B. Johns, M.D. Discussants: Ray Fife, M.D., Wallace A. Reed, M.D.	Convention Hall
11:30 A.M.	Intermission	Exhibit Tent
11:45 A.M.	Respiratory Allergy In Children Orval R. Withers, M.D., Kansas City, Mo. Moderator: Robert E. Hastings, M.D. Discussants: Howard M. Purcell, Jr., M.D., Hugh C. Thompson, M.D.	Convention Hall
12:15 A.M.	(To be announced) Edwin R. Schottstaedt, M.D., San Francisco Moderator: Robert E. Hastings, M.D. Discussants: Willard V. Ergenbright, M.D., Zenas B. Noon, M.D.	Convention Hall
1:00 P.M.	SPECIALTY SOCIETY LUNCHEONS *Open to all registrants*	
	Arizona Chapter of the American College of Chest Physicians Hereditary Hemorrhagic Telangiectasia and Pulmonary Arteriovenous Fistula Corrin H. Hodgson, M.D., Rochester, Minnesota Physiological Aspects of Cardiac Surgery Dwight C. McGoon, M.D., Rochester, Minnesota	Convention Hall
	Arizona Pediatric Society The Problem of Malnutrition in Children Harry Schwachman, M.D., Boston, Massacusetts	Garden Room
3:00 P.M.	BLUE SHIELD ANNUAL CORPORATION MEETING	Convention Hall
4:30 P. M.	REFERENCE COMMITTEE MEETINGS (on call)	Conference Room
	SPECIALTY SOCIETY BANQUETS *Open to all registrants*	
5:00 P.M.	Western Reserve Alumni Association Cocktails and Business Meeting	Pool Patio
7:30 P. M.	Arizona Academy of General Practice Louis Jolyon West, Oklahoma City	Convention Hall
	Arizona Society of Anesthesiologists Kenneth K. Keown, M.D., Columbia, Mo.	Kudu Room
	Arizona Chapter, Western Orthopedic Association Edwin R. Schottstaedt, M.D., San Francisco	

FRIDAY, May 6th

8:00 A.M.	SECOND SCIENTIFIC SESSION Leslie B. Smith, M.D., General Chairman	
8:00 A.M.	Breakfast Seminar: Hypnosis in Surgery and Obstetrics Moderator: Louis Jolyon West, M.D., Oklahoma City Panel: Max Costin, M.D., William J. Dignam, M.D., Kenneth K. Keown, M.D., Fred H. Landeen, M.D., Dwight C. McGoon, M.D., Edwin R. Schottstaedt, M.D.	Main Dining Room
9:00 A.M.	Intermission	Exhibit Tent

9:30 A.M.	Narcotic Addiction from the Point of View of a Law Enforcement Officer Col. George H. White, San Francisco Response: Narcotic Addiction, A Medical Problem Otto L. Bendheim, M.D., Phoenix Moderator: T. Richard Gregory, M.D. Discussants: Sgt. William E. Dunn, Warren S. Williams, M.D.	Convention Hall
10:10 A.M.	(To be announced) Louis J. West, M.D., Oklahoma City Moderator: T. Richard Gregory, M.D. Discussants: Richard E. H. Duisberg, M.D., Frank A. Shallenberger, Jr., M.D.	Convention Hall
10:40 A.M.	Recent Progress in Psychopharmacology Carlo Henze, M.D., Hanover, N. J. Moderator: Arthur V. Dudley, Jr., M.D. Discussants: William B. McGrath, M.D., Paul J. Slosser, M.D.	Convention Hall
11:10 A.M.	Intermission	Exhibit Tent
11:25 A.M.	Association's First Prize Award Paper Chairman: Arthur V. Dudley, Jr., M.D.	Convention Hall
11:45 A.M.	Symposium: Psychiatry in General Practice and the Specialties Moderator: Louis Jolyon West, M.D. Panel: William J. Digman, M.D., James L. Grobe, M.D., Corrin H. Hodgson, M.D., Edwin R. Schottstaedt, M.D., Harry Shwachman, M.D., Orval R. Withers, M.D.	Convention Hall
1:00 P.M.	SPECIALTY SOCIETY LUNCHEONS *Open to all Registrants*	
	Joint Meetings: Arizona Chapter, American College of Surgeons & Southwestern Obstetrical and Gynecological Society The Usefulness of Culdoscopy in Gynecologic Diagnosis William J. Dignam, M.D., San Francisco	Convention Hall
	Arizona Society of Allergy Orval R. Withers, M.D., Kansas City, Mo.	Kudu Room
	Arizona Society of Pathologists The Problem of Transfusion Hepatitis John B. Alsever, M.D., Phoenix	Garden Room
3:00 P.M.	HOUSE OF DELEGATES, SECOND MEETING	Convention Hall
7:00 P.M.	PRESIDENT'S RECEPTION	Pool Patio
8:00 P.M.	DINNER DANCE	Convention Hall

SATURDAY, May 8th

9:00 A.M.	THIRD SCIENTIFIC SESSION Ian M. Chesser, M.D., General Chairman	
9 A.M.	The Recognition and Treatment of Heart Failure in the Operating Room Kenneth K. Keown, M.D., Columbia, Mo. Moderator: W. R. Manning, M.D. Discussants: Samuel J. Grauman, M.D., Morris E. Stern, M.D.	Convention Hall

9:30 A.M.	Indications for Office Gynecologic Procedures of a Surgical Nature William J. Dignam, M.D., San Francisco Moderator: W. R. Manning, M.D. Discussants: Ivan W. Kazan, M.D., Roy O. Young, M.D.	Convention Hall
10:00 A.M.	Serotonin and the Carcinoid Syndrome Carlo Henze, M.D., Hanover, N. J. Moderator: W. R. Manning, M.D. Discussants: Richard L. Dexter, M.D., Jules L. Whitehill, M.D.	Convention Hall
10:30 A.M.	Intermission	Exhibit Tent
10:45 A.M.	The Solitary Circumscribed Pulmonary Nodule Corrin H. Hodgson, M.D., Rochester, Minn. Moderator: James D. Barger, M.D. Discussants: O. J. Farness, M.D., Dermont W. Melick, M.D.	Convention Hall
11:15 A.M.	Transfusion Therapy in the Emergency Treatment of Secondary Shock John B. Alsever, M.D., Phoenix Moderator: James D. Barger, M.D. Discussants: Kenneth E. Johnson, M.D., Charles A. L. Stephens, M.D.	Convention Hall
11:45 A.M.	Cardiac Septal Defects Dwight C. McGoon, M.D., Rochester, Minn. Moderator: James D. Barger, M.D. Discussants: Earl J. Baker, M.D., Hugh B. Hull, Jr., M.D.	Convention Hall
1:00 P.M.	ANNUAL HANDICAP GOLF TOURNAMENT	Scottsdale Country Club
7:00 P.M.	GOLFERS BANQUET. For tournament participants and their wives. C. Thomas Read, M.D., Golf Committee Chairman, presiding.	Scottsdale Country Club

LIST OF GUEST SPEAKERS AND TITLES

John B. Alsever, M.D., Medical Director, Southwest Blood Banks, Phoenix, Arizona.

William J. Dignam, M.D., Assistant Professor of Obstetrics and Gynecology, University of California, at Los Angeles.

Carlo Henze, M.D., Medical Director, Sandoz Pharmaceuticals, Hanover, New Jersey.

Corrin H. Hodgson, M.D., Asst. Professor of Medicine, Mayo Foundation, University of Minnesota.

Kenneth K. Keown, M.D., Professor of Anesthesiology, University of Missouri Medical School.

Dwight C. McGoon, M.D., Chief, Cardiac Surgical Section, Mayo Clinic, Rochester, Minn.

E. R. Schottstaedt, M.D., Associate Clinical Professor of Orthopedic Surgery, Univ. of California

Harry Schwachman, M.D., Associate Clinical Professor of Pediatrics, The Children's Medical Center, Boston, Massachusetts.

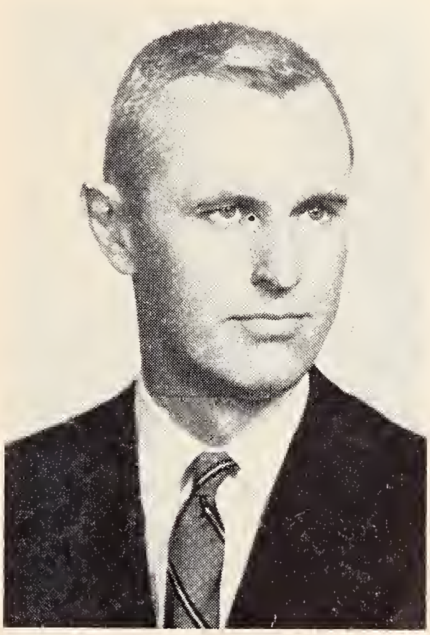
Lewis Jolyon West, Professor of Psychiatry, University Medical Center, Oklahoma City, Oklahoma.

Col. George H. White, Director Supervisor, Bureau of Narcotics, San Francisco, California.

Orval R. Withers, M.D., Associate Clinical Professor of Medicine, University of Kansas Medical School.

JOHN B. ALSEVER, M.D.

1. Syracuse University – AB, 1930
2. Harvard Medical School – M.D., 1934
3. Medical Internship and Residency Training – Peter Bent Brigham Hospital, Boston, Massachusetts, 1934-37.
4. Private Practice, Internal Medicine, Syracuse, New York, 1937-1942; Instructor in Medicine, Syracuse University Medical School; Assistant in Medicine, Syracuse University Hospital; Assistant in Medicine, Syracuse Memorial Hospital; Member of Cardiac Clinic, Out-patient Clinic.
5. Organized and directed Syracuse University Medical Center Blood Transfusion Service; research in blood banking, blood and plasma preservation, 1938-1942.
6. Medical Officer, U. S. Public Health Service, 1942-1945.
7. Medical Director, Southwest Blood Banks, Incorporated, Phoenix, Arizona, 1955 to present.
8. Consultant for Blood Program, FCDA, 1955 to present.
9. Other current positions: Secretary, American Association of Blood Banks; President, South Central Association of Blood Banks; Member, Standards Committee, American Association of Blood Banks.
10. Certified by American Board of Internal Medicine, 1941.
11. Professional Societies: Nu Sigma Nu, Sigma Xi, American Medical Association, Arizona Medical Association, Maricopa County Medical Society, Fellow, American College of Physicians, American Association of Blood Banks, South Central Association of Blood Banks, California Blood Bank Association, American Society of Clinical Pathologists, Association of Military Surgeons, Phoenix Society of Pathologists.



WILLIAM J. DIGNAM, M.D.

Born: Manchester, New Hampshire, August 11, 1920.

Graduated: Nashua High School, Nashua, New Hampshire, 1937.

AB Dartmouth College, Hanover, New Hampshire, 1941.

MD Harvard Medical School, Boston, Mass., 1943.

Intern: Boston City Hospital, Boston, Mass., 1944.

U.S. Navy: Medical Officer, Seabee Battalion, 1945-1946.

Resident: Obstetrics-Gynecology, University of Kansas, Medical Center, Kansas City, Missouri, 1947-1950.

Resident: Endocrinology, Duke University, Durham, North Carolina, 1948.

Instructor: Obstetrics-Gynecology, University of California Medical School, San Francisco, California, 1951-1953.

Assistant Professor: Obstetrics-Gynecology, University of California Medical School, Los Angeles, Calif., 1953-present (1959).

Associate Professor: University of California Medical School, Los Angeles, Calif., 1959-present.

CARLO HENZE, M.D.

Born on island in the Bay of Naples in 1907 of Austrian and British parentage. Attended elementary and high school in Switzerland and Austria. Medical education at the Medical Schools of Innsbruck, Vienna and Munich. M.D. Innsbruck 1933. 1934 to 1938 instructor and assistant professor department of pharmacology, University of Innsbruck School of Medicine. Author and co-author of several papers dealing with cardiovascular problems. Basic work together with A. Jarisch on afferent reflexes from the heart (Jarisch-Bezold reflex). 1938 resigned from University as a result of Austrian "Anschluss" to Germany. Accepted position as medical consultant with Sandoz Ltd. in Switzerland. Transferred to Sandoz Inc. USA in 1939 to organize and set up Medical Department. 1941 to 1945 Medical Corps Army U.S. Served as a Medical officer at Walter Reed Hospital and the Office of the Surgeon General in Washington. 1944 European Theater of Operations on special mission for War Department in England, France and Germany. Awarded the Legion of Merit for exceptionally meritorious service. Mustered out of service in late 1945 and returned to Sandoz. 1948 Manager Pharmaceutical Division and Medical Director. 1950 Vice-president. Member New York Academy of Science, American Society for Clinical Research and APMA. Speaks five languages fluently. Hobbies are mountain climbing, skiing and gardening, plays the cello.

CORRIN H. HODGSON, M.D.

B.S., M.D., M.S. (Med.), F.A.C.P., F.C.C.P. Graduate of the University of Minnesota Medical School, Fellow in Medicine, Mayo Foundation; Private Practice in Fergus Falls, Minnesota, and Lima, Peru. Since 1944, Consultant in Internal Medicine of the Mayo Clinic and members of a section of medicine concerned with diseases of the chest. Associate Professor of Medicine, Mayo Foundation, Graduate School, University of Minnesota.

KENNETH K. KEOWN, M.D.

Born May 25, 1917 in Independence, Missouri. The son of Charles Keown, M.D. and Dibyl E. Richards Keown. Attended the first grade through high school in the public schools of Independence. Graduated from Graceland College, Lamoni, Iowa in 1937. Attended Hahnemann Medical College and Hospital of Philadelphia, Pennsylvania. Received my M.D. in June 1941. Interned at Huron Road Hospital, Cleveland, Ohio, 1941-1942. Medical Corps, Army of United States, 1942-1946. Served as Battalion and Regimental Surgeon in Europe.

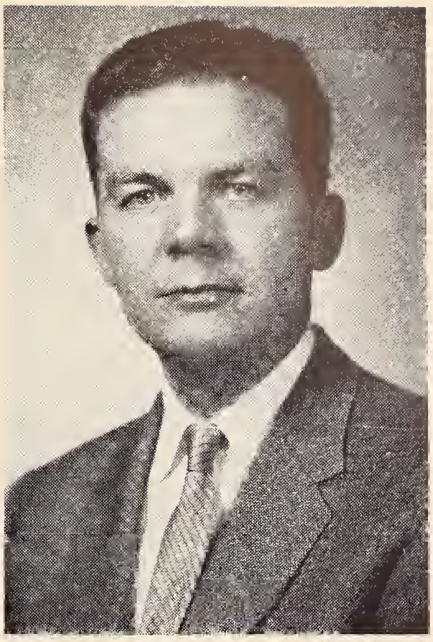
Residency — Anesthesiology at Hahnemann, Doctor Henry Ruth, Chief of Service, 1946-1948.

Joined staff at Hahnemann, 1948, remained as Associate Professor of Anesthesiology until 1957.

Professor of Anesthesiology, School of Medicine, of the University of Missouri from 1957 to present time.

Member of Boone County Medical Society, Missouri State Medical Association, Missouri Society of Anesthesiologists, American Medical Association (Assistant Secretary of Section on Anesthesiology), American Society of Anesthesiologists, (First vice-president currently), American College of Anesthesiologists, (Vice-chairman Board of Governors), American Society for the Advancement of Science, and Rotary International.

Author of monograph "Anesthesia for Surgery of the Heart," many articles on Anesthesiology applicable to Thoracic and Cardiovascular Anesthesia.



DWIGHT C. McGOON, M.D.

Birthplace and date: Marengo, Iowa, March 24, 1925.

Education: Hampton High School, Hampton, Iowa; Iowa State College, Ames, Iowa; St. Ambrose College, Davenport, Iowa.

M.D. Johns Hopkins University, Baltimore, Maryland — 1948.

I completed a six-year training program in surgery at the Johns Hopkins Hospital in 1954 in the department of Dr. Alfred Blalock. The last year I was in the capacity of Chief Resident.

Following the completion of this training program I was a Captain in the United States Air Force and acted in the capacity of Chief Surgical Consultant to the Air Force in Europe from 1954 to 1956.

I became a consultant in General Surgery at the Mayo Clinic in 1957.

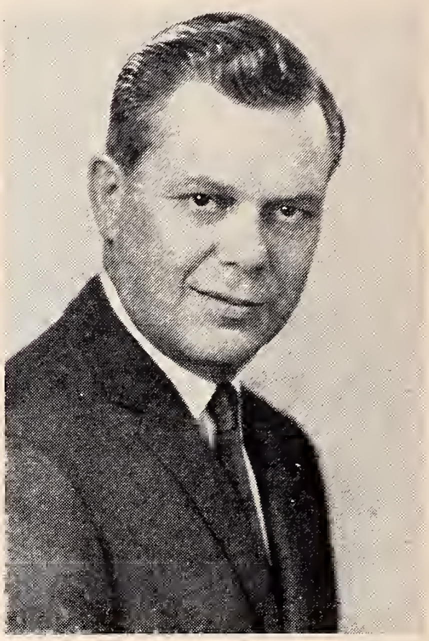
Member of the following Societies and Associations:

American Board of General Surgery
American Board of Thoracic Surgery
American Medical Association
American College of Surgeons
American Association for Thoracic Surgery
Western Surgical Association
Society of Medical Consultants to the Armed Forces
Minnesota State Medical Association
Minnesota Surgical Society

HARRY SCHWACHMAN, M.D.

Born March 19, 1910, Boston, Massachusetts.

1932	B.S. Massachusetts Institute of Technology
1936	M.D. Johns Hopkins Medical School
1936-37	Interneship in Pediatrics, Johns Hopkins Hospital
1937-41	Interneship and Residency in Pediatrics, Children's and Infants' Hospital, Boston
1939-47	Assistant in Pediatrics, Harvard Medical School
1941-42	Fellow in Pathology, Harvard Medical School at The Children's Hospital
1941	Fulfiled Specialty Requirements, American Board of Pediatrics
1942-46	U. S. Army
1944-46	Chief of Laboratory, Rodriguez General Hospital, San Juan, Puerto Rico
1946	Chief, Division of Clinical Laboratories, The Children's Medical Center
1947-48	Instructor in Pediatrics, Harvard Medical School
1947	Chief, Chronic Nutrition Clinic, The Children's Medical Center
1947	Physician, The Children's Medical Center
1947	Consultant, Tumor Therapy, The Children's Medical Center
1947	Secretary-Treasurer, New England Pediatric Society
1948-51	Associate in Pediatrics, Harvard Medical School
1950	Consultant in Pediatrics, U. S. Navy, Pediatric Unit, Chelsea
1951	Assistant Professor in Pediatrics, Harvard Medical School at The Children's Medical Center
1951	First Mead Johnson Award
1956	Chairman, Medical Education Committee, National Cystic Fibrosis Research Foundation
1957	Associate Clinical Professor of Pediatrics, Harvard Medical School
1958	Fellow, American Pediatric Society
1959	Consultant in Pediatrics, Woonsocket General Hospital, Woonsocket, R.I.



EDWIN R. SCHOTTSTAEDT, M.D.

Graduate of the University of Michigan.

Certified by American Board of Orthopaedic Surgeons 1947.

Chief Surgeon Shrine Hospital, San Francisco Unit.

Associate Clinical Professor in Orthopaedic Surgery, University of California School of Medicine.

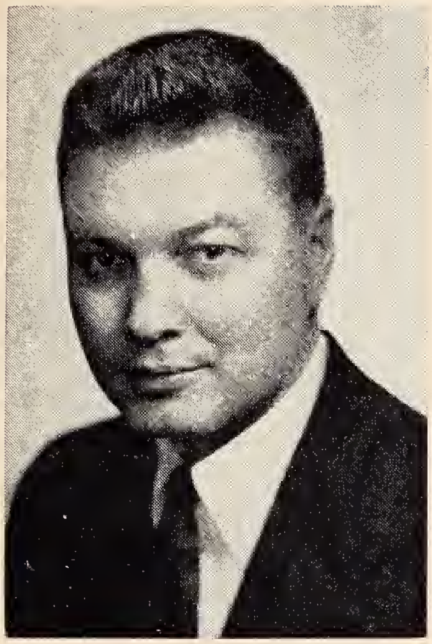
Medical Director of May T. Morrison Rehabilitation Center.

Attending Staff Children's Hospital.

Attending Staff University of California Hospital.

Active Staff Franklin Hospital.

Member of: American Academy of Orthopaedic Surgeons, American Orthopaedic Association, Fellow of American College of Surgeons, Western Orthopaedic Association, California Medical Association.



LOUIS JOLYON WEST, M.D.

Born in New York City, Dr. West received his early education in Madison, Wisconsin and Iowa City, Iowa. He received his M.D. degree from the University of Minnesota in 1949. His academic appointments include that of Assistant in Psychiatry, Cornell University Medical College, 1950-1952, and Professor and Head, Department of Psychiatry, Neurology and Behavioral Sciences, University of Oklahoma School of Medicine, 1954 to the present.

Other current appointments: Chief Consultant in Psychiatry, Oklahoma City Veterans' Administration Hospital; Research Coordinator, Oklahoma Alcoholism Association; Chief, Behavioral Sciences, Oklahoma Medical Research Foundation; Consultant in Psychiatry, USAF Hospital, Tinker AFB, Okla.; Advisory Council, Behavioral Sciences Division, Air Force Office of Scientific Research; Committee on Research, American Psychiatric Association; National Consultant in Psychiatry to The Surgeon General, United States Air Force; Advisory Editor, The International Journal of Clinical and Experimental Hypnosis; Committee on Hypnosis, Council on Mental Health of the American Medical Association; and Professional Advisory Committee, National Association for Mental Health.

Dr. West served as Chief, Psychiatry Service, USAF Hospital, Lackland AFB, San Antonio, Texas, 1952-1956. He is a Diplomate, National Board of Medical Examiners, and is certified in Psychiatry by the American Board of Psychiatry and Neurology (1954). Dr. West holds memberships in numerous national, regional and state societies of his chosen specialty and is the author of various articles having been published and additional articles, books and monographs ready for publication.

COL. GEORGE H. WHITE

Has been a member of the Federal Bureau of Narcotics for more than 25 years. He served in Europe and the Middle East, as well as in almost every state of the United States. He holds the Treasury Medal for exceptional service for wiping out narcotic rings in the Middle East and Europe when he worked as a special undercover agent there.

During World War II he served in the Office of Strategic Services.

Some of his most sensational cases have involved investigations and raids in San Francisco and the Bay Area. He is presently District Supervisor of the States of California, Nevada and Arizona.

He was born in Los Angeles and attended Alhambra High School and Oregon State College before starting his career in the field of narcotics law enforcement.

ORVAL R. WITHERS, M.D.

M.D., Northwestern University, 1926; Fellow, American College of Allergists; Fellow, American College of Physicians; Associate Professor of Clinical Medicine, University of Kansas Medical School, Kansas City, Kansas; Staff, University of Kansas Hospital, Kansas City, Kansas, St. Mary's Hospital and Baptist Hospital, ansas City, Missouri; Consultant in Medicine (Allergy), Veterans Administration Hospital.

WOMAN'S AUXILIARY

The woman's Auxiliary of the Arizona Medical Association will hold its annual meeting in the Safari Hotel concurrently with the Association's annual meeting. Registration for the Woman's Auxiliary will be in the lobby of the Safari Hotel.

HOBBY SHOW

The Woman's Auxiliary to The Arizona Medical Association announces its Hobby Show to be conducted during the 69th Annual Meeting, May 4-7. Mrs. William Butcher has been appointed chairman.

The show was well received last year, and plans are being made to expand it this year. Subjects and categories to be judged are photography, painting and crafts of all types (ceramics, woodworking, leathercraft, needlework, etc.)

Bring or send entries by Wednesday, May 4, if possible. Deadline Thursday morning, May 5.

Awards to winners will be presented at banquet, Friday evening, May 6.

SPECIAL A.M.E.F. BENEFIT STYLE SHOW

Mrs. Hiram Cochran, president of the Woman's Auxiliary, promises a new kind of style show (consisting of one person) to be presented throughout the Arizona Medical Association's 69th Annual Meeting, May 4-7, and culminating in a unique (to say the least) finale at the Friday evening banquet.

Watch for the model!

AN INVITATION TO THE ANNUAL MEETING OF THE ARIZONA TUBERCULOSIS & HEALTH ASSOCIATION AND THE ARIZONA TRUDEAU SOCIETY

April 23 & 24, 1960 – Ramada Inn, Phoenix

ATTENTION – ALL DOCTORS

Sunday, April 24, 1960

8:00 A.M. Breakfast ($1.50 per person) Business Meeting

PROGRAM Lloyd K. Swasey, M.D. Presiding (A question period is included after each paper).

9:00 A.M. "Practical Aspects of Pulmonary Function Studies"
Ulrich C. Luft, M.D., Chief, Department of Physiology, Lovelace Foundation, Albuquerque

10:00 A.M. "Unusual Diseases of the Lungs"
James A. Weir, M.D., Colonel, U. S. Army Medical Chorps, Chief, Pulmonary Disease Section, Fitzimmons Army Hospital, Denver

11:15 A.M. "Interesting Chest X-rays"
Leo Reich, M.D., Chief Roentgenologist, V. A. Hospital, Phoenix

12:00 Noon Panel Discussion of Interesting or Diagnostic Problem X-rays
M. J. Noon, M.D., Chairman
Discussants:
Chest Surgeons – D. W. Melick, M.D., Earl Baker, M.D.
Roentgenologists – M. L. Sussman, M.D., J. Riordan, M.D.
Chest Physicians – B. L. Snyder, M.D., H. E. Kosanke, M.D.

1:00 P.M. Session Ends

NO FEE FOR REGISTRATION

All Doctors, Pulmonary Function Laboratory Personnel and Nurses are cordially invited.

M. J. NOON, M.D., Chairman
Trudeau Society Program

REGIONAL SPRING AND SUMMER MEETINGS

May 12-14, 1960
Nevada Academy of General Practice
Reno, Nevada

May 16-18, 1960
American Ophthalmological Society
Colorado Springs, Colorado

May 18-21, 1960
American Academy of General Practice
New Mexico Chapter
Ruidoso, New Mexico

June 1-3, 1960
Physical Medicine and Rehabilitation in Neuromuscular and Medical Conditions
University of Colorado Medical Center
Denver, Colorado

June 17-19, 1960
Conference on Research in Emphysema
Aspen, Colorado

June 22-25, 1960
Society of Nuclear Medicine
Estes Park, Colorado

July 5-8, 1960
Ophthalmology
Aspen, Colorado

July 11-13, 1960
Obstetrics and Gynecology
University of Colorado Medical Center
Denver, Colorado

July 14-16, 1960
Dermatology for General Practitioners
University of Colorado Medical Center
Denver, Colorado

July 18-21, 1960
New Mexico Chapter, American Academy of General Practice, Ruidoso Summer Clinic
Ruidoso, New Mexico

July 20-21, 1960
Rocky Mountain Cancer Conference
Denver, Colorado

July 27-29, 1960
American Academy of Pediatrics, Regional Meeting
Denver, Colorado

August 11-13, 1960
Medical Statistics for the Clinician
"What Numbers Can You Believe?"
University of Colorado Medical Center
Denver, Colorado

August 15-19, 1960
Western Cardiac Conference
Denver, Colorado

August 31-September 6, 1960
Pediatrics
Estes Park, Colorado

PAN AMERICAN MEDICAL ASSOCIATION

The 35th Anniversary Congress of the Pan American Medical Association will be held in Mexico City, May 2-11, 1960. Bienvenido!

The first synthetic penicillin
available
for general clinical use

FOR YOUR NEXT PATIENT WHERE PENICILLIN IS INDICATE

SYNC

PEAK BLOOD LEVELS TWICE AS HIGH AS WITH POTASSIUM PENICILLIN V

ORAL ROUTE PROVIDES HIGHER PEAK BLOOD LEVELS THAN INTRAMUSCULAR PENICILLIN G

IMPROVED ANTIBIOTIC ACTION FROM ISOMERIC COMPLEMENTARITY

CONSIDER THESE 6 IMPORTANT THERAPEUTIC ATTRIBUTES OF

POTASSIUM PENICILLIN-152

ANTIBIOTIC ACTIVITY DIRECTLY PROPORTIONAL TO ORAL DOSE

REDUCED RATE OF INACTIVATION BY STAPH PENICILLINASE

MANY STAPH STRAINS MORE SENSITIVE TO SYNCILLIN IN VITRO

BRISTOL

FOR HIGHLY EFFECTIVE THERAPY OF THE LARGE VARIETY OF INFECTIONS CAUSED BY SUSCEPTIBLE PATHOGENS...NEW

SYNC

Significance of complementary action of isomers in SYNCILLIN

The antibiotic effect of the clinically available mixture, SYNCILLIN, is greater than that of either of its two component isomers alone against many important pathogens, including some penicillin-resistant staphylococci. This phenomenon has been described as *Isomeric Complementarity.*

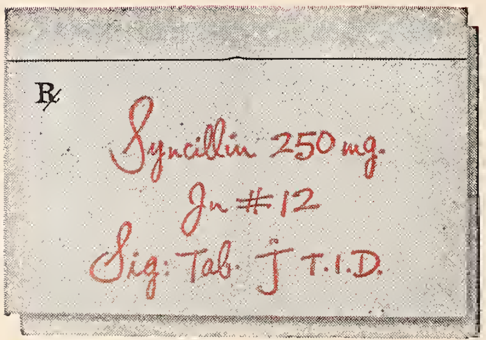
Significance of higher blood levels with SYNCILLIN

Higher blood levels may be of value with organisms of only moderate penicillin sensitivity where doubling the blood concentration may be essential for effective bactericidal action. In addition, these higher levels may be necessary where there is infection in areas with a poor blood supply. Under these circumstances a higher blood concentration may provide the increased diffusion pressure required to deliver adequate amounts to the tissue. Also, antibiotic activity of SYNCILLIN is directly proportional to oral dosage. Increasing the dosage may, therefore, enhance the drug's effectiveness in certain cases.

Efficacy of SYNCILLIN against staphylococci and other resistant organisms

Studies have shown that SYNCILLIN is effective *in vitro* against 60 to 75% of hospital "staph" strains, while penicillin G and penicillin V are now effective against only 30 to 50%.[1, 2] Therefore, if clinical judgment indicates the use of penicillin, SYNCILLIN would be expected to be the most effective. However, since some strains are still resistant to SYNCILLIN as well as to the other penicillins, cultures and sensitivity tests should be performed where indicated by clinical judgment.

There have recently been reports of decreased efficacy of penicillin in streptococcal[3] and gonococcal[4, 5] infections. The emergence of penicillin-resistant gonococci appears to be associated with an increase in the incidence of gonorrhea all over the world. When a less sensitive strain is encountered the higher blood levels produced by SYNCILLIN may be most helpful.



℞

Syncillin 250 mg.

Jn #12

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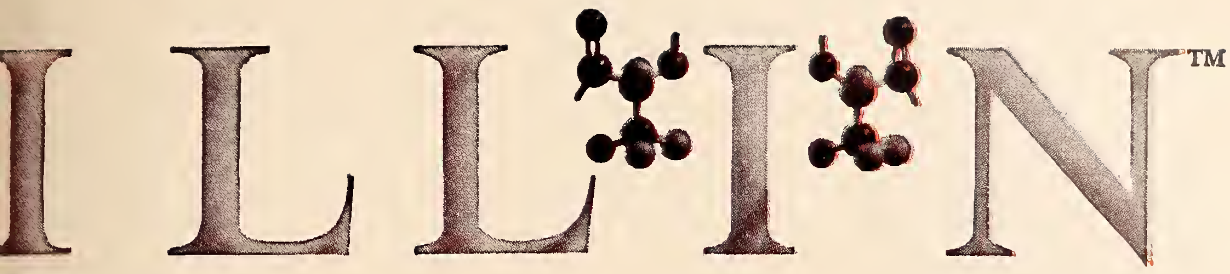
major therapeutic advantages accompany molecular asymmetry



Relation of intermittent high blood levels of SYNCILLIN to antibacterial efficacy

SYNCILLIN, like all clinically available penicillins, is bactericidal. Periodic high blood concentrations may be sufficient to permit complete eradication of sensitive pathogens. According to Eagle,[6] "Soon after penicillin attains effective concentrations, the bacteria cease multiplying; and the bacteriostatic effect persists for a number of hours after penicillin has fallen to concentrations that are wholly ineffective. . . . The therapeutic significance of this postpenicillin recovery period is enhanced by the fact that the recovering bacteria, damaged but not killed by the previous exposure to penicillin, are abnormally susceptible to the host defenses. In consequence, the bactericidal process *in vivo* continues for many hours after the drug itself has fallen to ineffective concentrations."

Reduced rate of inactivation of SYNCILLIN by staph penicillinase

Bacterial resistance to penicillin has been attributed to the action of penicillin-inactivating enzymes produced by the invading organisms. SYNCILLIN is less affected by staphylococcal penicillinase than either of its component isomers. Further, SYNCILLIN is shown to be less inactivated by this enzyme than penicillin V or penicillin G. Penicillinase from *B. cereus* likewise inactivates SYNCILLIN less rapidly than penicillin V or G.

Indications: SYNCILLIN is recommended in the treatment of infections caused by pneumococci, streptococci, gonococci, corynebacteria, and penicillin-sensitive staphylococci. In addition, SYNCILLIN is effective against certain strains of staphylococci resistant to other penicillins. SYNCILLIN, like other oral penicillins, is not recommended at the present time in deep-seated or chronic infections, subacute bacterial endocarditis, meningitis, or syphilis.

Dosage: 125 mg. or 250 mg. three times daily, depending on the severity of infection. Larger doses (e.g., 500 mg. t.i.d.) may be used for more severe infections. SYNCILLIN may be administered without regard to meals. Beta hemolytic streptococcal infections should be treated with SYNCILLIN for at least ten days.

Precautions: At the present time it is not possible to draw definite conclusions regarding the incidence of allergenicity to SYNCILLIN or its cross-allergenicity with natural penicillins. *Therefore, the usual precautions for oral penicillin therapy should always be observed.* Patients with histories of asthma, hay fever, urticaria, or previous reactions to penicillin should be watched with special care. Administration of oral penicillin, in rare instances, may provoke acute anaphylaxis, particularly in penicillin-sensitive individuals.

Diarrhea has been reported occasionally following heavy dosage. If this occurs, lengthen the interval between dosages.

If superinfection occurs during therapy, appropriate measures should be taken. Since some strains of staphylococci are resistant to SYNCILLIN as well as to other penicillins, cultures and sensitivity tests should be performed where indicated by clinical judgment. As is true with all antibiotics, clinical response does not always correlate with laboratory bacterial sensitivity reports.

Supply: 125 and 250 mg. tablets, bottles of 25 and 100. 125 mg. powder for oral solution, 60 ml. vials.

References: 1. Wright, W. W.: Microbiology Report to Bristol Laboratories Inc. 2. Morigi, E. M. E.; Wheatley, W. B., and Albright, H.: Paper presented at the Seventh Antibiotic Symposium, November 4-6, 1959, Washington, D.C. 3. Editorial: New England J. Med. **261**:305 (Aug. 6) 1959. 4. King, A.: Lancet **1**:651 (March 29) 1958. 5. Epstein, E.: J.A.M.A. **169**:1055 (March 7) 1959. 6. Eagle, H. and Musselman, A. D.: J. Bact. **58**:475, 1949.

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in infectious disease[17,2
in arthritis[18,1
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in degenerative disease[6,7,1
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Once you've prescribed milk and rest for a peptic ulcer patient, Donnalate may be the best means for fulfilling his therapeutic regimen. This is because Donnalate combines several recognized agents which effectively complement each other and help promote your basic plan for therapy. A single tablet also simplifies medicine-taking.

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Each Donnalate tablet equals one Robalate® tablet plus one-half Donnatal® tablet: Dihydroxyaluminum aminoacetate, N. F., 0.5 Gm.; Phenobarbital (⅛ gr.), 8.1 mg.; Hyoscyamine sulfate, 0.0519 mg.; Atropine sulfate, 0.0097 mg.; Hyoscine hydrobromide, 0.0033 mg.

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DEBORAH HOSPITAL SYMPOSIUM

The second International Symposium of the Deborah Hospital on Current Concepts in Medicine will be held April 28, 29, 30, 1960 in the Bellvue Stratford Hotel, Philadelphia, Pennsylvania.

FIFTH MEDICAL SEMINAR CRUISE

The Duke University School of Medicine is again offering doctors a chance to combine postgraduate study with an overseas vacation by sponsoring its fifth medical seminar cruise, this year to the Baltic. The "T.S. ARIADNE" will sail from Wilmington, North Carolina on June 5 and from New York City on June 8, the cruise terminating in Hamburg, Germany on June 28.

Shipboard lectures will be given as well as lectures in the medical centers at Leningrad, Helsinki, Stockholm and Copenhagen. The medical program has been approved by the American Academy of General Practice for Category I credit.

PERCENTAGE OF CIVILIAN POPULATION WITH SOME FORM OF VOLUNTARY HEALTH INSURANCE PROTECTION AS OF DECEMBER 31, 1958:

12 states — Over 75% of civilian population covered

28 states — 50-75% of civilian population covered

10 states — Under 50% of civilian population covered

(This includes Alaska and Hawaii)

Seventy-one per cent of the population of the U. S. was protected by health insurance at the end of 1958. New York was the leading state with 90.5% coverage.

USE OF INTRAMUSCULAR IRON IN PREMATURE INFANTS by Milton O. Kepler, M.D.

Intramuscular iron-dextran complex appears to offer a safe and effective method of treatment for the classic iron deficiency anemia of prematurity. (Condensed from *Archives Pediatrics,* 76:410, 1959)

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Each coated tablet (pink) contains: meprobamate, 400 mg.; d-amphetamine sulfate, 5 mg.
Dosage: One tablet one-half to one hour before each meal.

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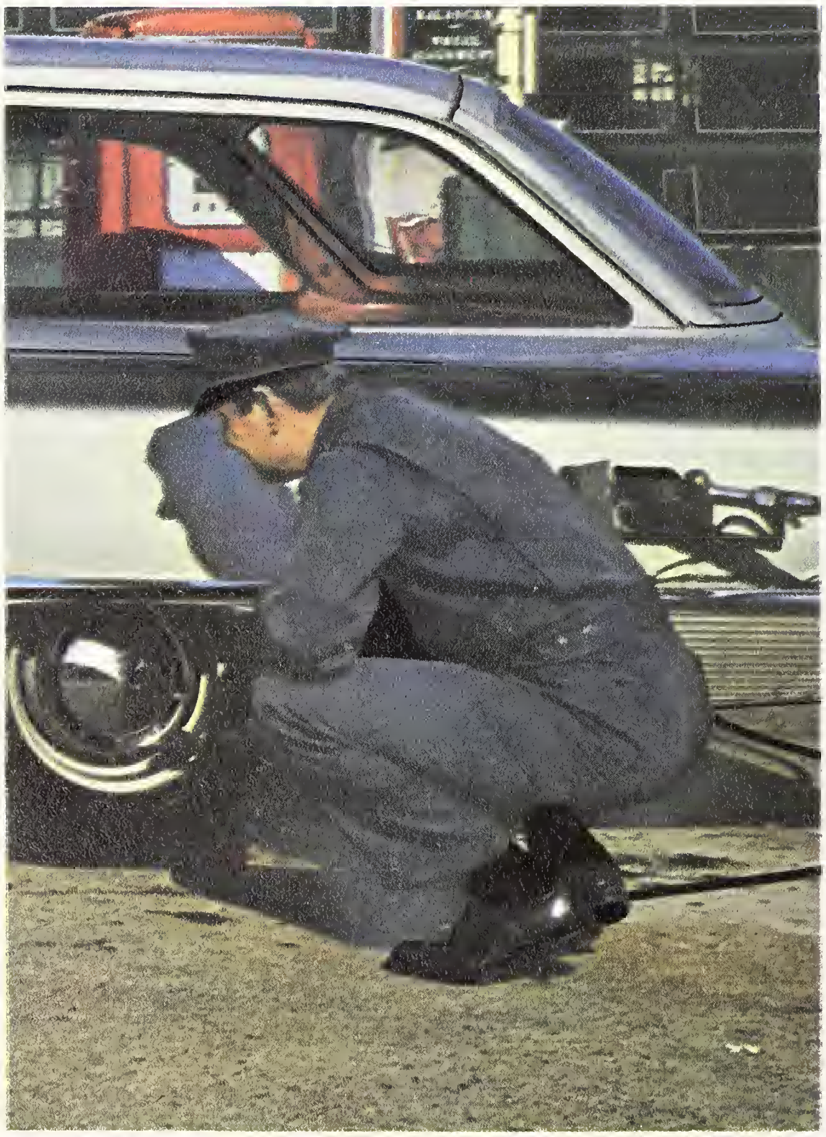
relaxes skeletal muscl spasm so the patien can continue to worl



Clinical experience shows that Trancopal will e
able your patients with low back pain to kee
going strong. Lichtman[1] reports that 310 of h
331 patients treated with Trancopal obtaine
satisfactory relief. These patients were sufferi
from low back pain, stiff neck, postoperati
muscle spasm or other skeletal muscle spasr
associated with trauma, bursitis, osteoarthrit
and rheumatoid arthritis. Mullin and Epifan
reported that Trancopal brought relief to all of 3
patients with skeletal muscle spasm. In thes
patients, who had suffered from trauma, bursiti
rheumatoid arthritis, osteoarthritis, and interve
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". . . excellent and prompt . . ."[2] Gruenberg[3] o
tained marked relief with Trancopal in 258 of 30
patients with low back pain, torticollis, arthrit
and other conditions associated with skelet
muscle spasm. Moderate relief was obtained i
an additional group of 28 patients. Trancopal
a true "tranquilaxant" because "It combines th
properties of tranquilization and skeletal musc
relaxation with no concomitant change in norm
consciousness."[4] Side effects have been few an
minor — and in no case were they serious enoug
to warrant discontinuing the use of Trancopal
"Trancopal is exceptionally safe for clinical use."

elieves anxiety and tension so the patient can carry on

Trancopal is also an effective agent for patients in anxiety and tension states. According to recent clinical reports,[1,5] it calms the patients but allows them to continue their work or other activity. Indeed, Lichtman found that his patients with anxiety "... were in many instances able to continue their normal activities where previously they had been considerably restricted ..."[1] He observed that Trancopal brought good to excellent relief to 114 of 120 patients in anxiety states. Ganz,[5] who noted good to excellent relief in 32 of 35 patients with globus hystericus, and in his entire series of 100 patients in anxiety or tension states, comments: "Chlormethazanone [Trancopal], by relieving the psychogenic symptoms, allows the patient to use his energies in a more productive manner in overcoming his basic problems."[5]

Relieves dysmenorrhea — Trancopal has also proved to be a useful medication in the treatment of patients with dysmenorrhea,[1,4,6] probably producing its effect "... by means of a combination of muscle relaxant and tranquilizing actions."[4]

Indications

Musculoskeletal disorders

- Low back pain (lumbago)
- Neck pain (torticollis)
- Bursitis
- Fibrositis
- Myositis
- Ankle sprain, tennis elbow
- Osteoarthritis
- Rheumatoid arthritis
- Disc syndrome
- Postoperative muscle spasm

Psychogenic disorders

- Dysmenorrhea
- Premenstrual tension
- Anxiety and tension states
- Asthma
- Angina pectoris
- Alcoholism

Dosage: Adults, 100 or 200 mg. orally three or four times daily. Relief of symptoms generally occurs promptly and lasts from four to six hours.

How Supplied: Trancopal Caplets® 100 mg. (peach colored, scored) and 200 mg. (green colored, scored), bottles of 100.

eferences: **1.** Lichtman, A. L.: Kentucky Acad. Gen. Pract. J. 4:28, Oct., 1958. 2. Mullin, W. G., and Epifano, Leonard: Am. Pract. & Digest Treat. :1743, Oct., 1959. 3. Gruenberg, Friedrich: Current Therap. Res. 2:1, Jan., 1960. 4. Shanaphy, J. F.: Current Therap. Res. 1:59, Oct., 1959. Ganz, S. E.: J. Indiana M. A. 52:1134, July, 1959. **6.** Stough, A. R.: J. Oklahoma M. A. 52:575, Sept., 1959.

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Maximal Flexibility
May be administered without regard to meals. However, highest absorption is achieved when taken just before or between meals.

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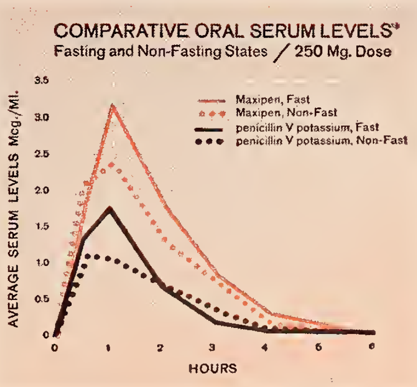
Indicated in infections caused by streptococci, pneumococci, susceptible staphylococci, and gonococci

DOSAGE: For moderately severe conditions, 125 to 250 mg. three times daily. For more severe conditions, 500 mg. as often as every four hours around the clock.

NOTE: To date, MAXIPEN has not shown less allergic reactions than older oral penicillins. Usual precautions regarding penicillin administration should be observed.

SUPPLIED: MAXIPEN TABLETS, scored, 125 mg. (200,000 units), bottles of 36; 250 mg. (400,000 units), bottles of 24 and 100 tablets. MAXIPEN FOR ORAL SOLUTION; reconstituted each 5 cc. contains 125 mg. (200,000 units), in 60 cc. bottles.



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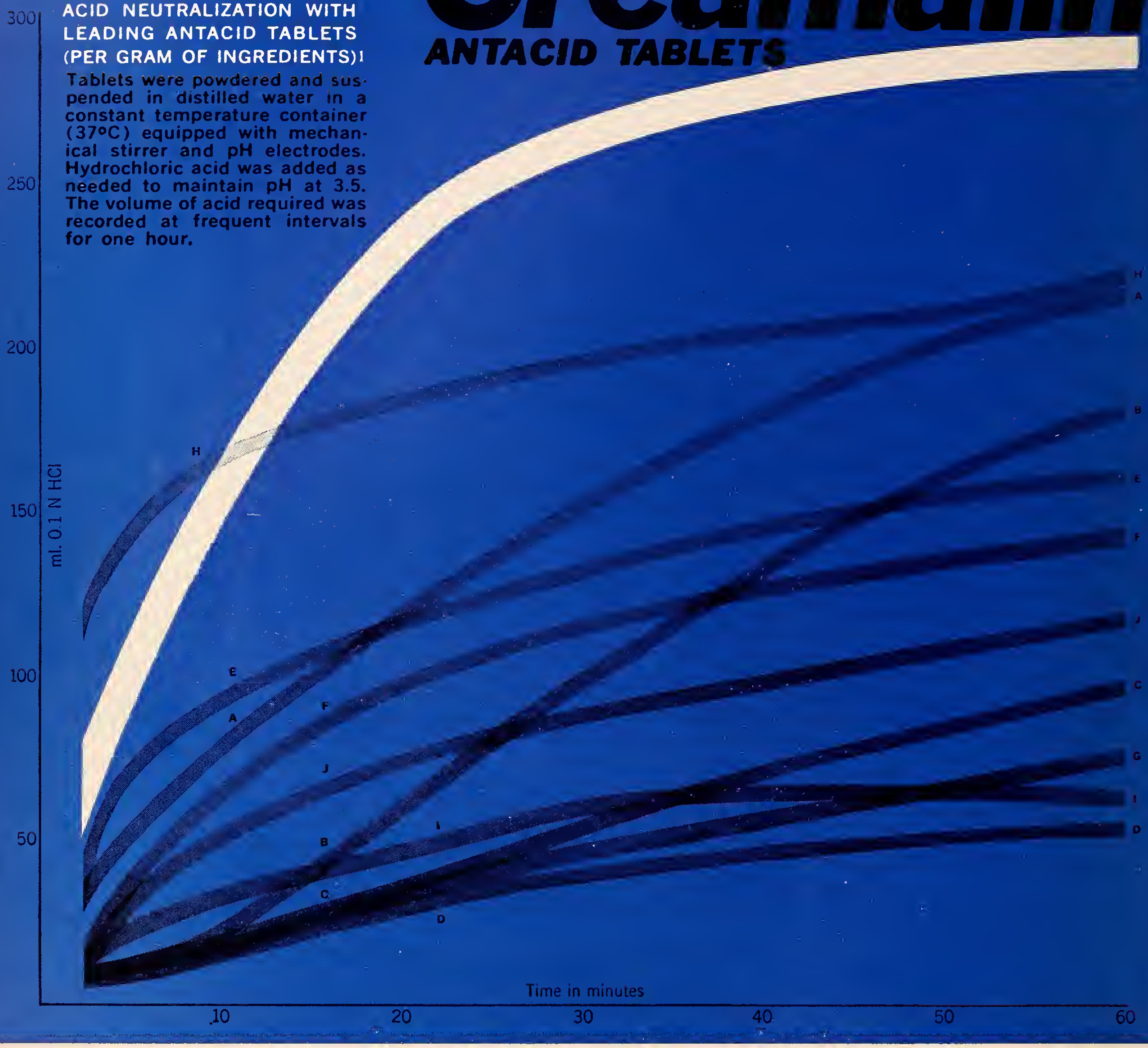

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EACH NEW CREAMALIN ANTACID TABLET contains 320 mg. of specially processed, highly reactive, short polymer dried aluminum hydroxide gel (stabilized with hexitol), with 75 mg. of magnesium hydroxide.

Adult dosage: Gastric hyperacidity—2 to 4 tablets as necessary. Peptic ulcer or gastritis—2 to 4 tablets every two to four hours. Tablets may be chewed, swallowed whole with water or milk, or allowed to dissolve in the mouth.

How Supplied: Bottles of 50, 100, 200 and 1000.

1. Hinkel, E. T., Jr.; Fisher, M. P., and Tainter, M. L.: *J. Am. Pharm. A. (Scient. Ed.)* 48:380, July, 1959. 2. Hinkel, E. T., Jr.; Fisher, M. P., and Tainter, M. L.: *J. Am. Pharm. A. (Scient. Ed.)* 48:384, July, 1959.

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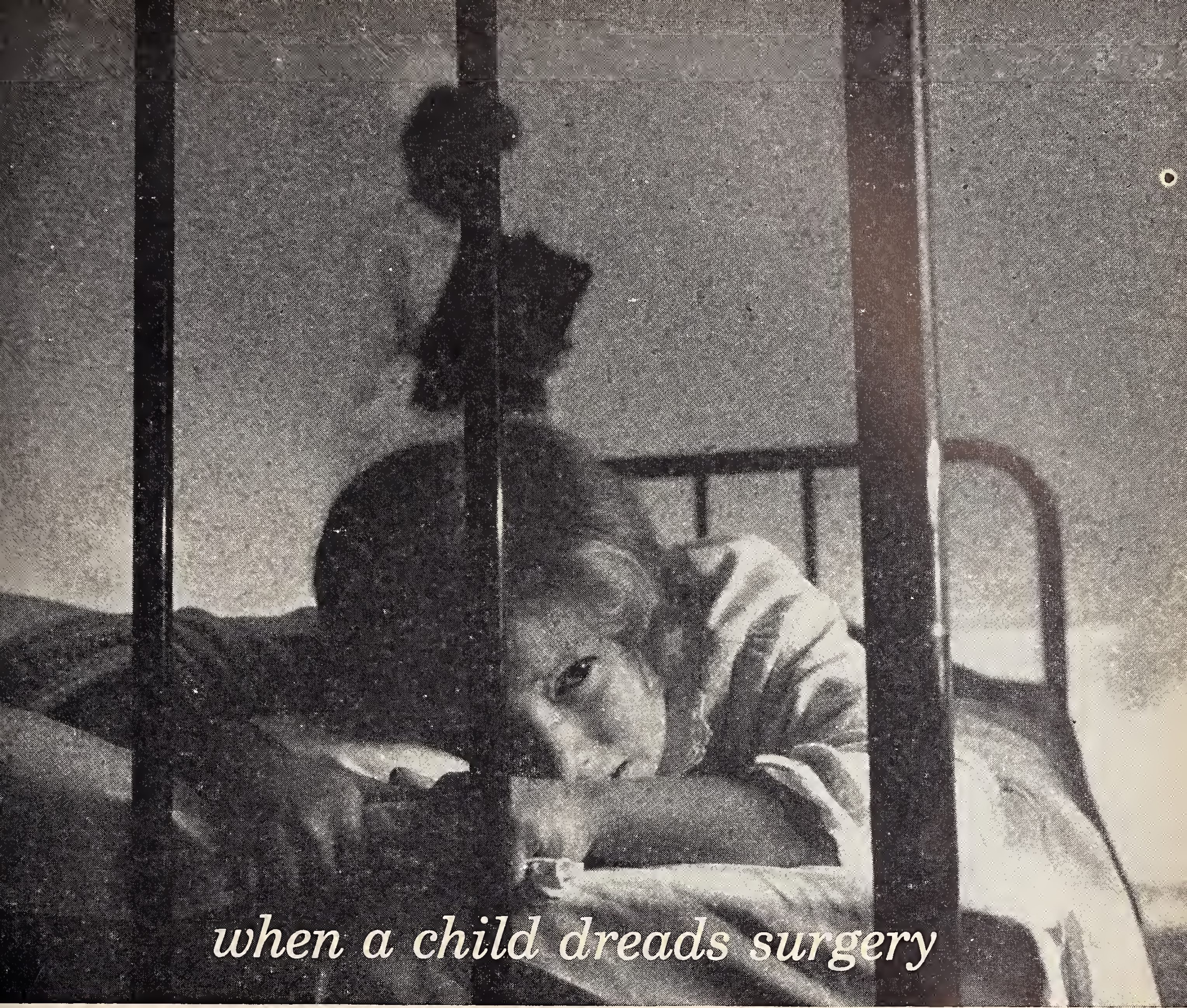
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VISTARIL has been found to be a remarkably effective aid to preanesthetic medication. Its "mild but definite tranquilizing action" quickly calms anxious, fearful children.

Steiner, L., Webb, C., and Adriani, J.: The Preoperative Sedation of Children, Presented before the Southern Society of Anesthesiologists, Annual Meeting, April 23-25, 1959, Birmingham, Alabama.

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tastes good! Each daily cherry-flavored teaspoonful dose (5 cc.) contains:

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Vitamin B_{12} Crystalline	25 mcgm.
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Sorbitol	3.5 Gm.
Alcohol	0.75%

Bottles of 4 and 16 fl. oz.

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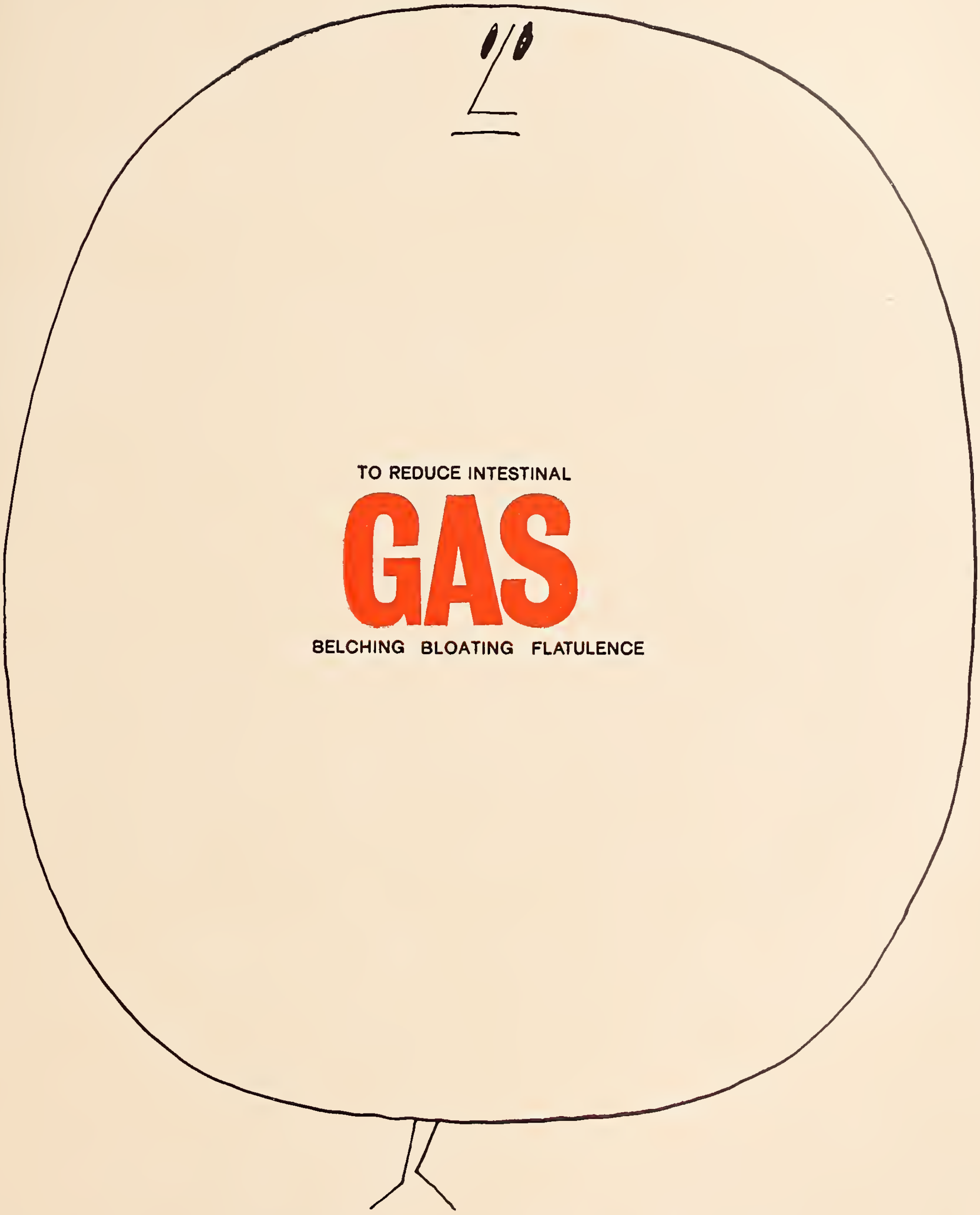

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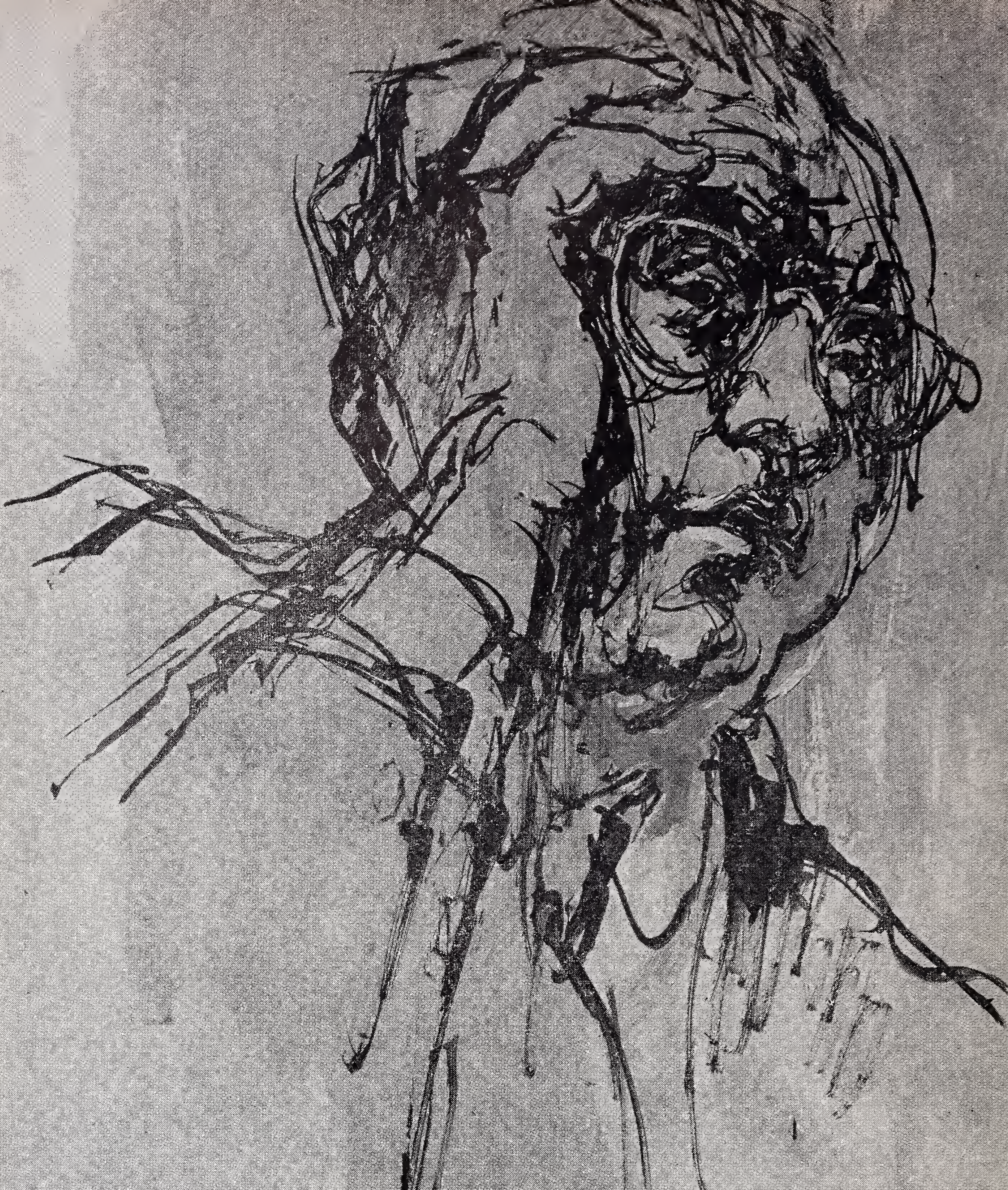

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Thanks to your prompt treatment and the smooth action of Deprol, her depression is relieved and her anxiety and tension calmed — *often in two or three days*. She eats well, sleeps well and soon returns to her normal activities.

Lifts depression... as it calms anxiety!

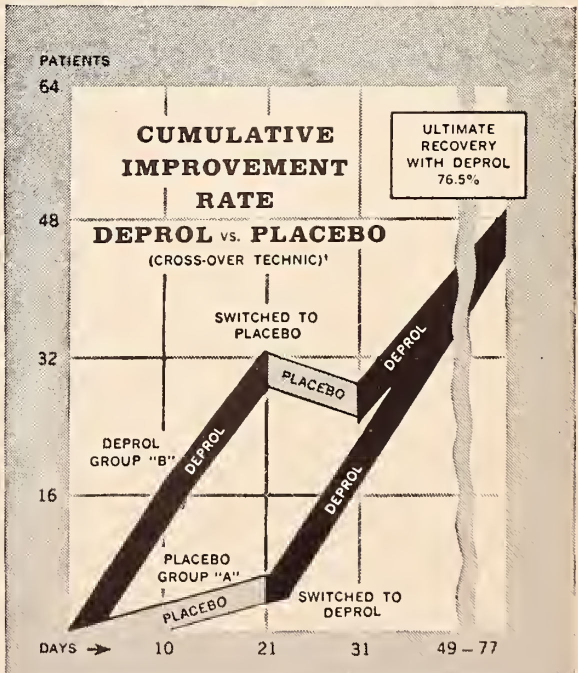
Smooth, balanced action lifts depression as it calms anxiety...rapidly and safely

Balances the mood — no "seesaw" effect of amphetamine-barbiturates and energizers. While amphetamines and energizers may stimulate the patient — *they often aggravate anxiety and tension.* And although amphetamine-barbiturate combinations may counteract excessive stimulation — *they often deepen depression.*

In contrast to such "seesaw" effects, Deprol lifts depression as it calms anxiety — both at the same time.

Acts swiftly — the patient often feels better, sleeps better, within two or three days. Unlike the delayed action of most other antidepressant drugs, which may take two to six weeks to bring results, Deprol relieves the patient quickly — often within two or three days.

Acts safely — no danger of liver damage. Deprol does not produce liver damage, hypotension, psychotic reactions or changes in sexual function — frequently reported with other antidepressant drugs.



[1] Ref.: McClure et al. (Am. Pract. & Digest Treat. 10:1525, Sept. 1959)

▲Deprol▲®

Dosage: Usual starting dose is 1 tablet q.i.d. When necessary, this may be gradually increased up to 3 tablets q.i.d. **Composition:** 1 mg. 2-diethylaminoethyl benzilate hydrochloride (benactyzine HCl) and 400 mg. meprobamate. **Supplied:** Bottles of 50 light-pink, scored tablets. Write for literature and samples.

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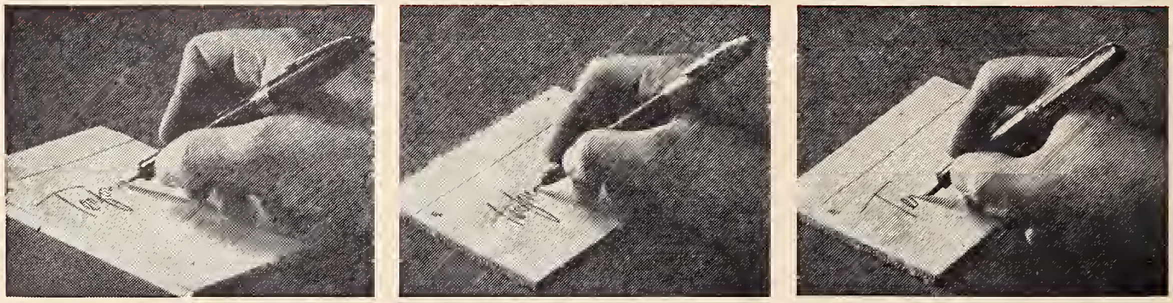

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'ACTIFED' contains:	in each Tablet	in each tsp. Syrup
'Actidil'® brand Triprolidine Hydrochloride	2.5 mg.	1.25 mg.
'Sudafed'® brand Pseudoephedrine Hydrochloride	60 mg.	30 mg.

safe and effective for patients of all ages suffering from respiratory tract congestion

DOSAGE

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Adults and older children	1	2	three times daily
Children 4 months to 6 years of age	½	1	
Infants through 3 months	–	½	

BURROUGHS WELLCOME & CO. (U.S.A.) INC., Tuckahoe, New York

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1. Lippmann, O.: Arch. Ophth. 57:339, March 1957.
2. Gordon, D.M.: Am. J. Ophth. 46:740, November 1958.

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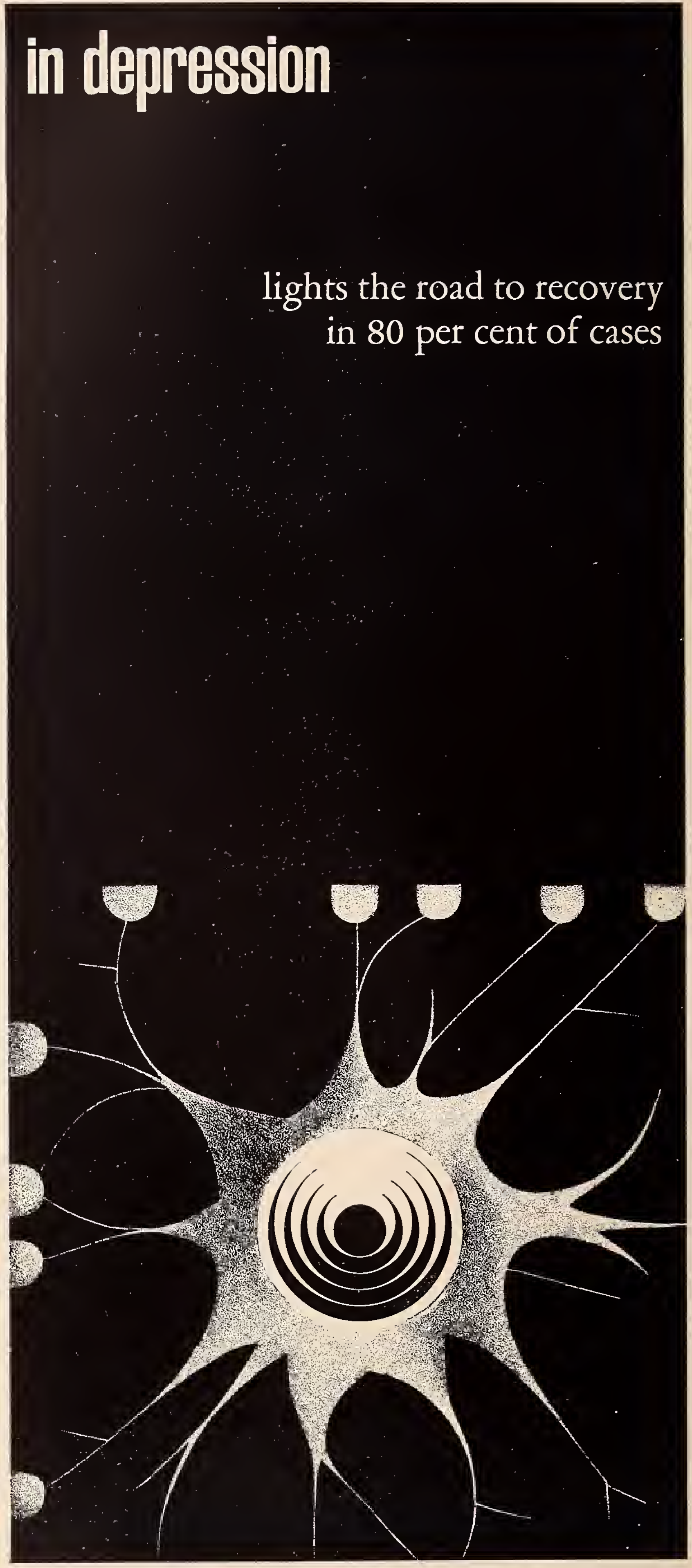
brand of imipramine HCl


in depression
lights the road to recovery
in 80 per cent of cases

In the treatment of depression Tofrānil has established the remarkable record of producing remission or improvement in approximately 80 per cent of cases.[1-7]

Tofrānil is well tolerated in usage—is adaptable to either office or hospital practice—is administrable by either oral or intramuscular routes.

Tofrānil
a potent thymoleptic . . .
not a MAO inhibitor.

Does act effectively in *all* types of depression regardless of severity or chronicity.

Does not inhibit monoamine oxidase in brain or liver; produce CNS stimulation; or potentiate other drugs such as barbiturates and alcohol.

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Tofrānil® brand of imipramine HCl: tablets of 25 mg., bottles of 100. Ampuls for intramuscular administration only, each containing 25 mg. in 2 cc. of solution, cartons of 10 and 50.

References: 1. Ayd, F. J., Jr.: Bull. School Med., Univ. Maryland *44*:29, 1959. 2. Azima, H., and Vispo, R. H.: A.M.A. Arch. Neurol. & Psychiat. *81*:658, 1959. 3. Lehmann, H. E.; Cahn, C. H., and de Verteuil, R. L.: Canad. Psychiat. A. J. *3*:155, 1958. 4. Mann, A. M. and MacPherson, A. S.: Canad. Psychiat. A. J. *4*:38, 1959. 5. Sloane, R. B.; Habib, A., and Batt, U. E.: Canad. M.A.J. *80*:540, 1959. 6. Straker, M.: Canad. M.A.J. *80*:546, 1959. 7. Strauss, H.: New York J. Med. *59*:2906, 1959.

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Chronic Appendicitis?
Rheumatoid Arthritis? Regional Enteritis?

A DISEASE that is frequently overlooked in solving diagnostic quandaries is amebiasis. Its symptoms are varied and contradictory, and diagnosis is extremely difficult. In one study, 56% of the cases would have been overlooked if the routine three stool specimens had been relied on.[1]

Another study found 96% of a group of 150 patients with rheumatoid arthritis were infected by *E. histolytica*. In 15 of these subjects, nine stool specimens were required to establish the diagnosis.[2]

Webster discovered amebic infection in 147 cases with prior diagnoses of spastic colon, psychoneurosis, gall bladder disease, nervous indigestion, chronic appendicitis, and other diseases. Duration of symptoms varied from one week to over 30 years. In some cases, it took as many as six stool specimens to establish the diagnosis of amebiasis.[3]

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1. Cook, J.E., Briggs, G.W., and Hindley, F.W.: Chronic Amebiasis and the Need for a Diagnostic Profile, Am. Pract. and Dig. of Treat. *6*:1821 (Dec., 1955).

2. Rinehart, R.E., and Marcus, H.: Incidence of Amebiasis in Healthy Individuals, Clinic Patients and Those with Rheumatoid Arthritis, Northwest Med., *54*:708 (July, 1955).

3. Webster, B.H.: Amebiasis, a Disease of Multiple Manifestations, Am. Pract. and Dig. of Treat. *9*:897 (June, 1958).

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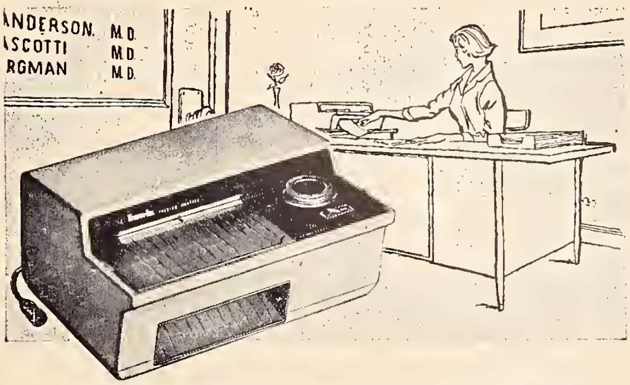
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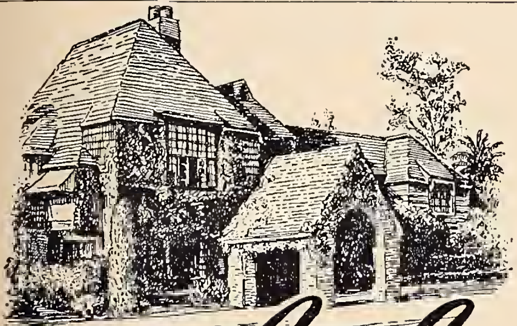

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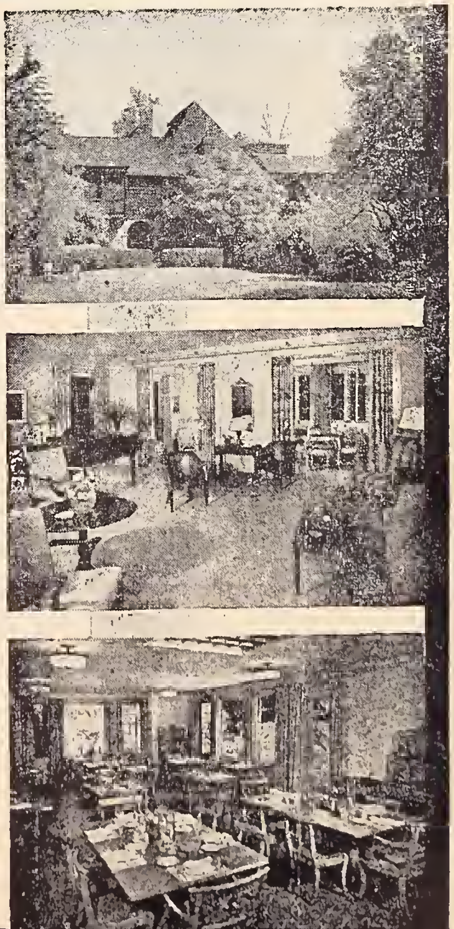

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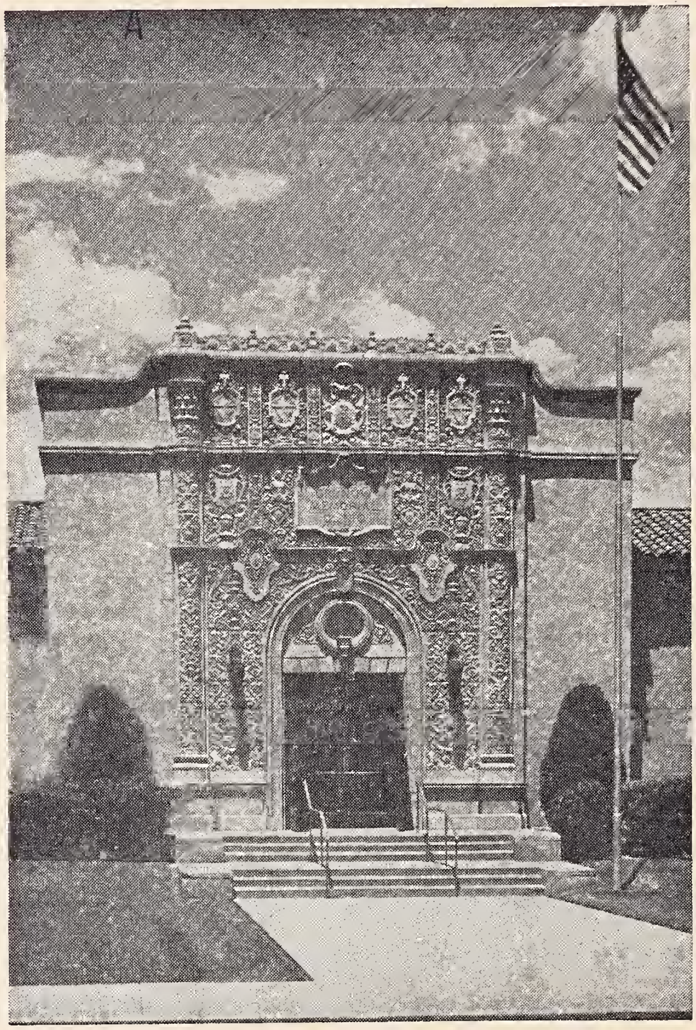

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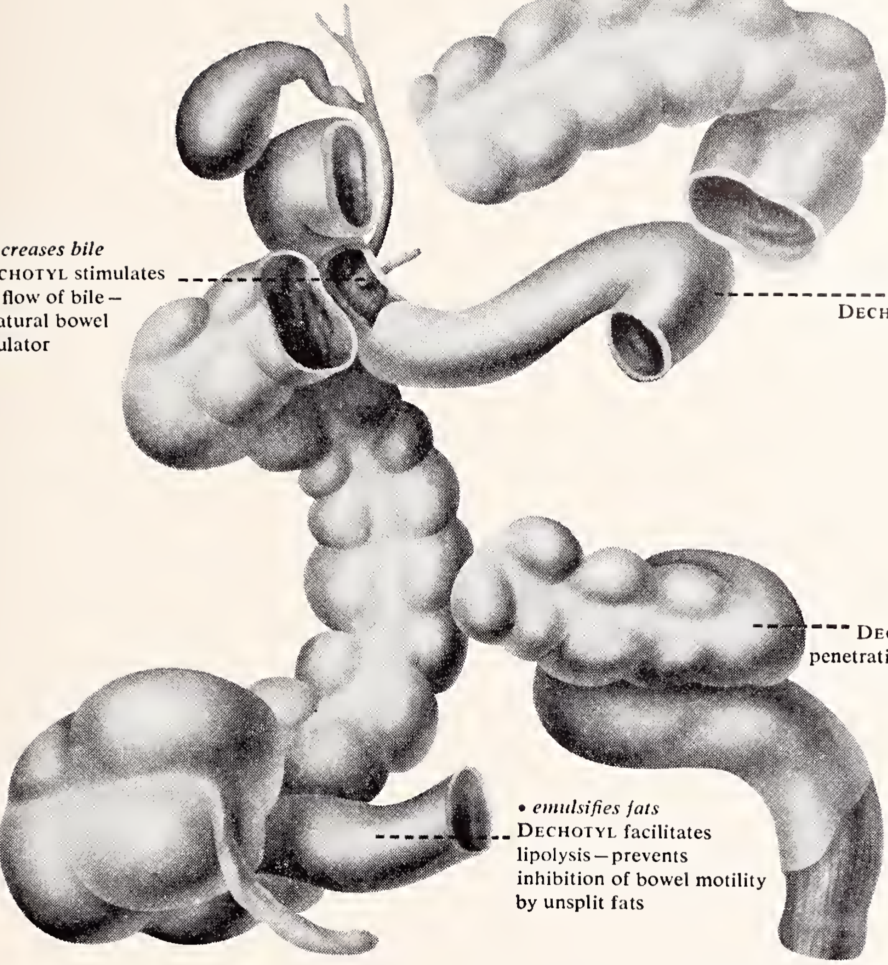

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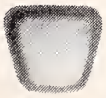

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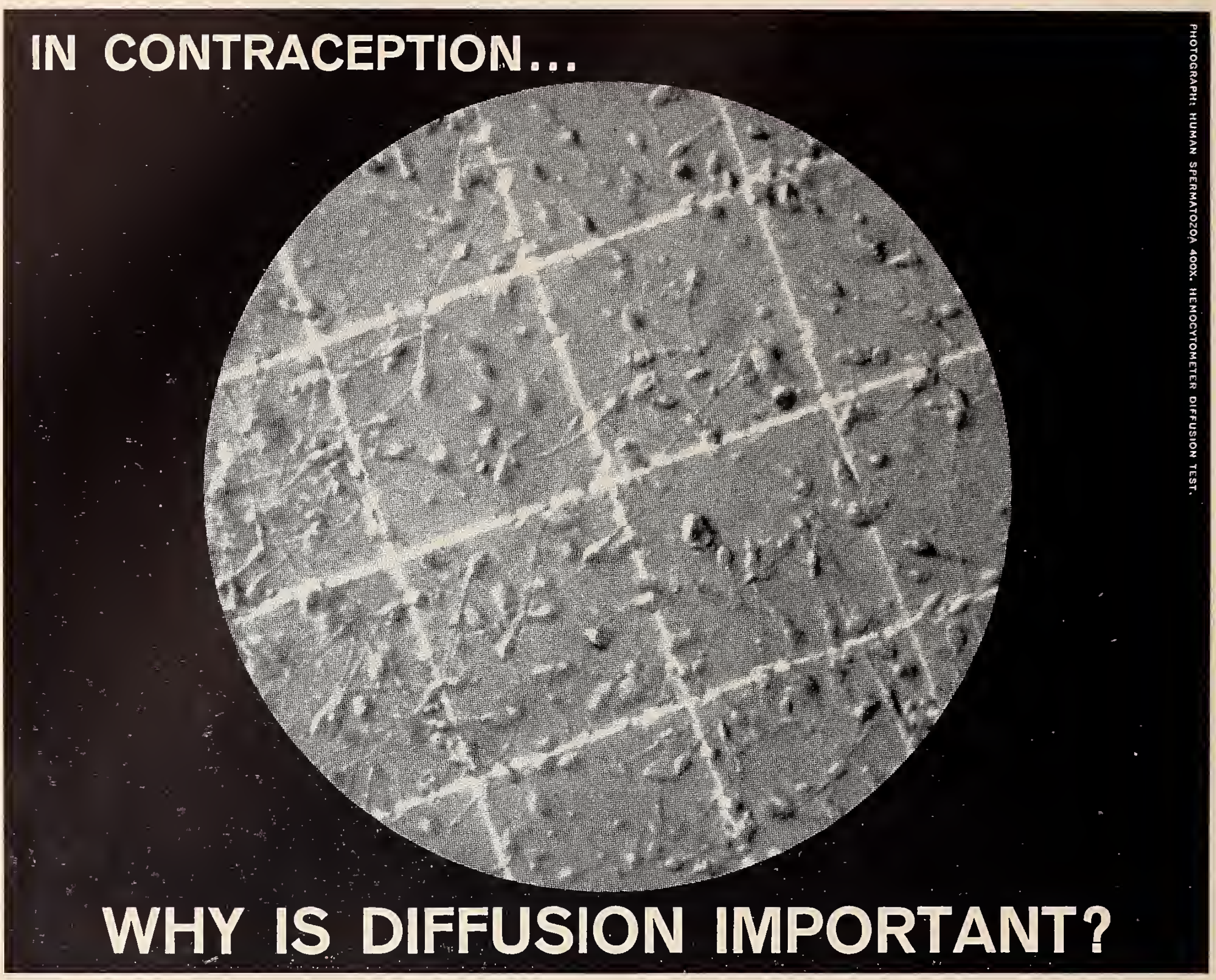
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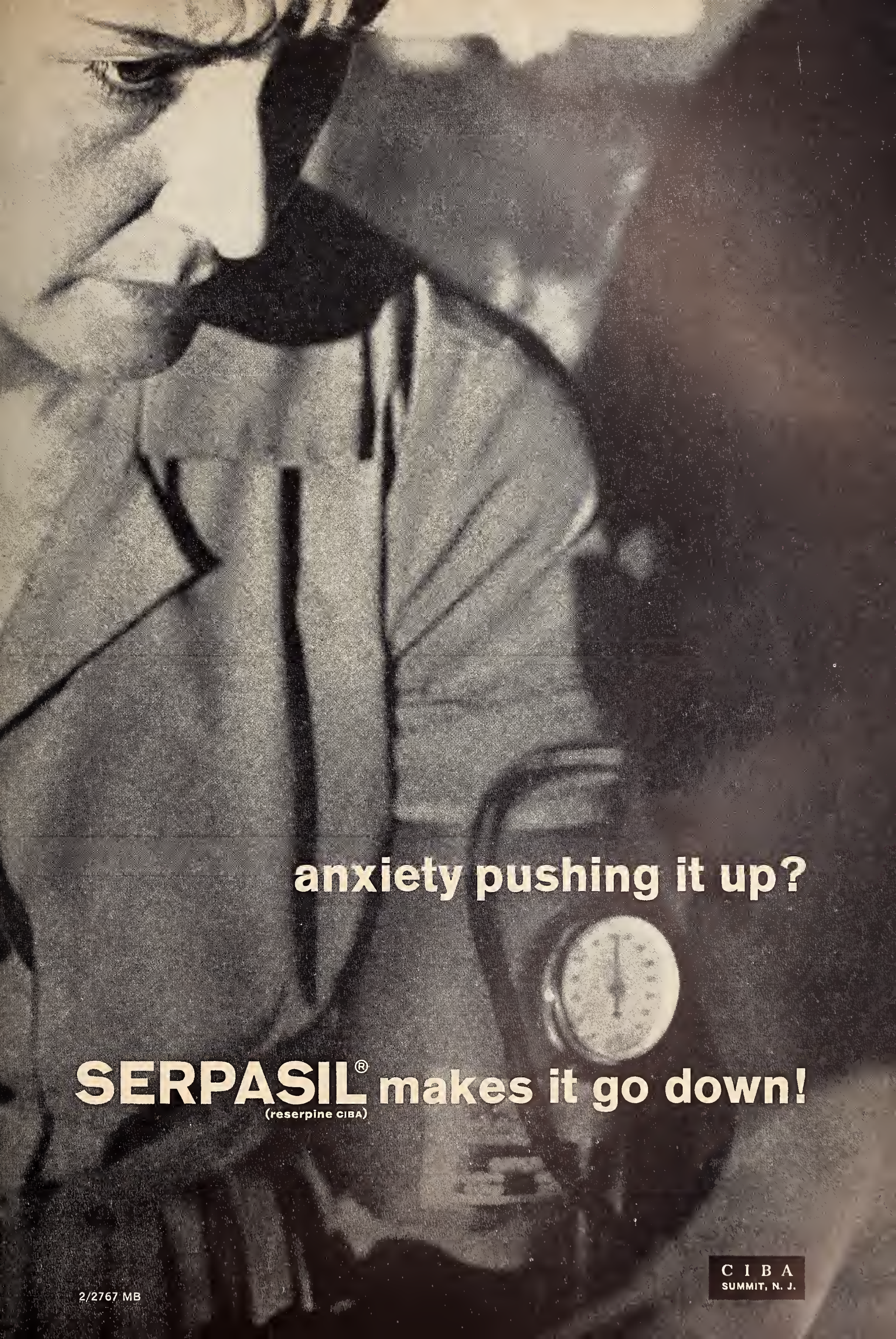
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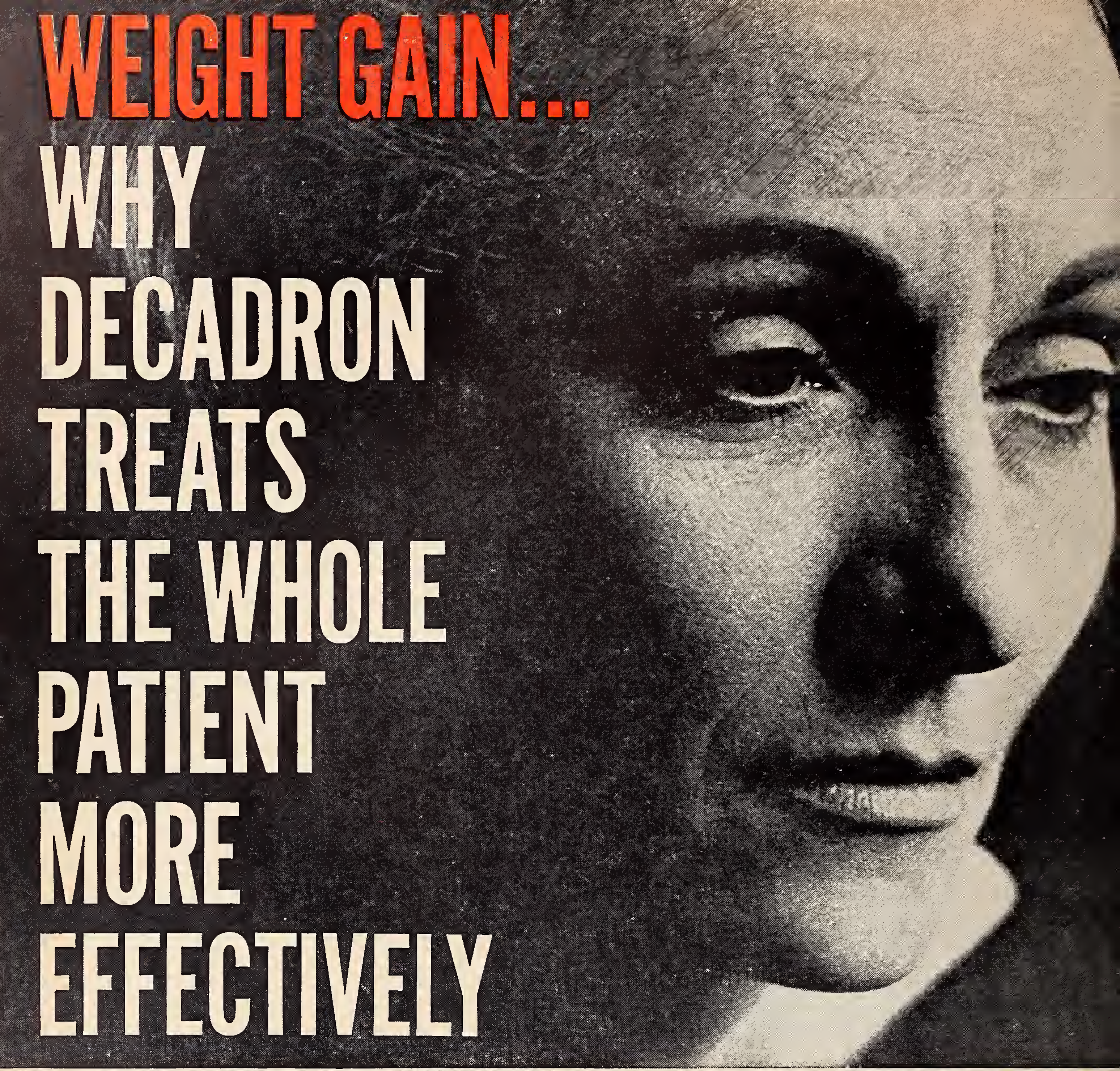

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May, 1960

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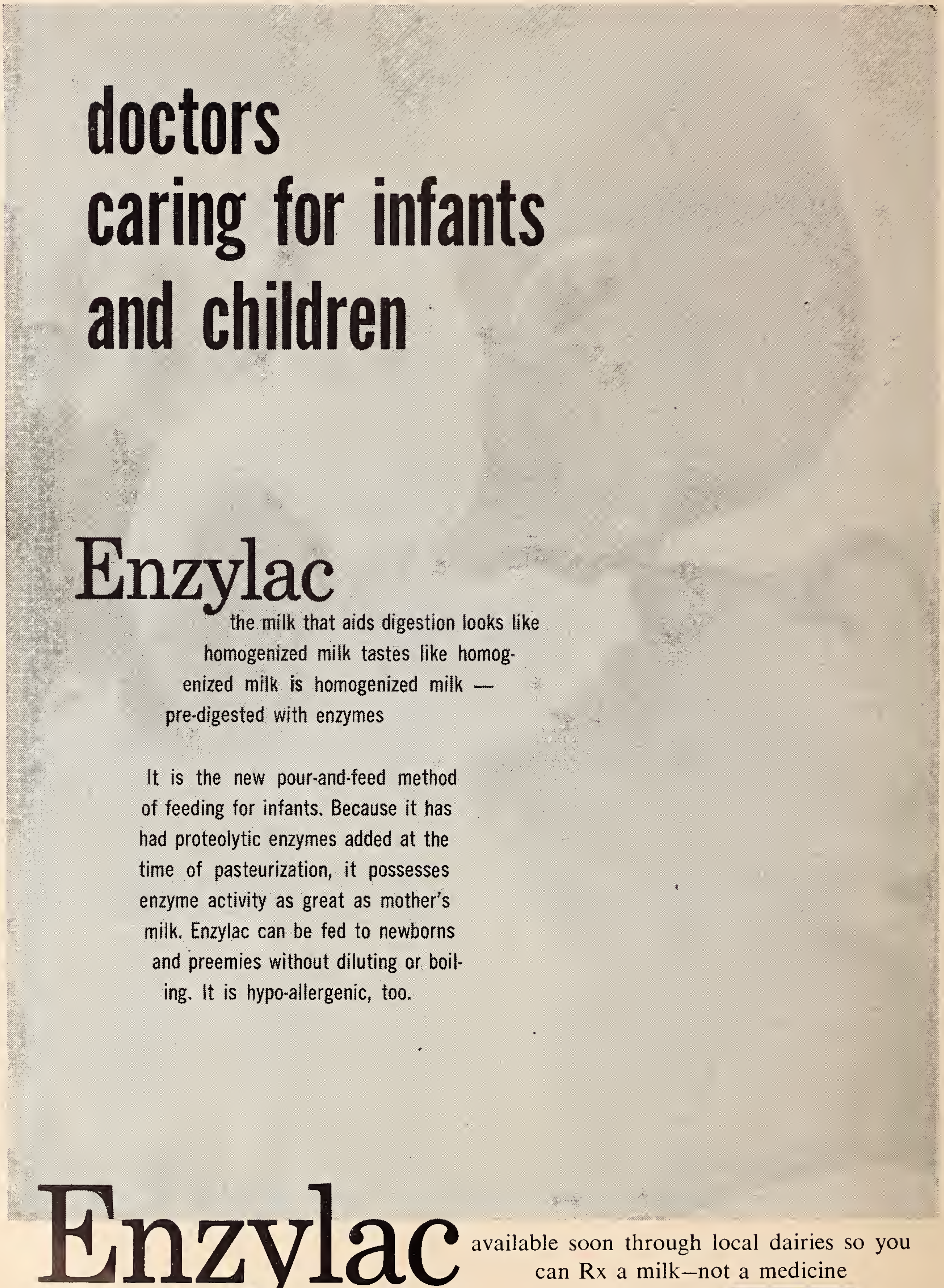
Published monthly by the Arizona Medical Association, Inc. Business office at 1021 Central Towers Building, Phoenix, Arizona. Subscription $5 a year, single copy 50 cents. Entered as second class matter March 1, 1921, at Postoffice at Phoenix, Arizona, Act of March 3, 1879.

(The Editors of the Journal assume no responsibility for opinions expressed in the articles contributed by individual members.)



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NATIONAL CASUALTY COMPANY
Detroit, Michigan

An Accident & Sickness Insurance Plan designed for the Doctor of Medicine of the Arizona Medical Association, Inc.

Approved by the Insurance Committee and Board of Directors.

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3424 N. Central Ave. — Phoenix, Arizona

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Health Needs
Since 1908

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DRUG STORES

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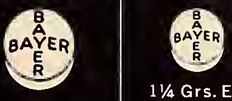


1¼ Grs. Ea.
FLAVORED

Living up to a family tradition

There are probably certain medications which are special favorites of yours, medications in which you have a particular confidence.

Physicians, through ever increasing recommendation, have long demonstrated their confidence in the uniformity, potency and purity of Bayer Aspirin, the world's first aspirin.

And like Bayer Aspirin, Bayer Aspirin for Children is quality controlled. No other maker submits aspirin to such thorough quality controls as does Bayer. This assures uniform excellence in both forms of Bayer Aspirin.

You can depend on Bayer Aspirin for Children for it has been conscientiously formulated to be the best tasting aspirin ever made and to live up to the Bayer family tradition of providing the finest aspirin the world has ever known.

Bayer Aspirin for Children—1¼ grain flavored tablets—Supplied in bottles of 50.

● We welcome your requests for samples on Bayer Aspirin and Flavored Bayer Aspirin for Children.

New
GRIP-TIGHT CAP
for Children's
Greater Protection

THE BAYER COMPANY, DIVISION OF STERLING DRUG INC., 1450 BROADWAY, NEW YORK 18, N. Y.

now...for greater patie

a smooth, creamy preparation
containing the highly active
topical corticosteroid,
triamcinolone acetonide,
plus neomycin

a form of
ARISTOCORT®
Triamcinolone
to fill any
topical need

Aristocort Acetonide Cream
TRIAMCINOLONE ACETONIDE 0.1%
Tubes of 5 and 15 Gm.

Aristocort Acetonide Ointment
TRIAMCINOLONE ACETONIDE 0.1%
Tubes of 5 and 15 Gm.
Especially desirable in thick lichenified chronic dermatoses requiring frictional applica

Neo-Aristocort® Acetonide Eye-Ear Ointment
NEOMYCIN-TRIAMCINOLONE ACETONIDE 0.1%
Tubes of ⅛ oz.
For inflammatory, allergic, infective eye and ear conditions

ceptance...

Neo-Aristoderm*

Triamcinolone Acetonide-Neomycin LEDERLE

FOAM

several factors indicate NEO-ARISTODERM Foam for topical treatment of dermatoses:

(1) The Active Ingredients
Triamcinolone Acetonide — with therapeutic efficacy equal to or greater than that of topical hydrocortisone — in one-tenth the concentration;[1,2] plus neomycin — a leading topical antimicrobial agent.

(2) The Vehicle
NEO-ARISTODERM Foam spreads readily without irritation or burning. It can be applied to oozing, crusted, severely inflamed and injured skin, or to mucous membranes. There have been no reactions of primary irritation or allergic sensitization to date.

(3) Patient Acceptance
NEO-ARISTODERM Foam *is neat—not messy or sticky*. Patients like the attractive push-button dispenser and the richness of the foam. This helps to assure faithful adherence to your instructions.

Triamcinolone Acetonide 0.1%, Neomycin Sulfate 0.35%   15 cc. Push-button dispenser

References: 1. Kanof, N. B., and Blau, S.: *New York J. Med.* 59:2184 (June 1) 1959.
2. Smith, J. G., Jr.; Zawisza, R. J., and Blank, H.: *A.M.A. Arch. Dermat.* 78:643 (Nov.) 1958.

Lederle   LEDERLE LABORATORIES, A Division of AMERICAN CYANAMID COMPANY, Pearl River, New York

*TRADEMARK

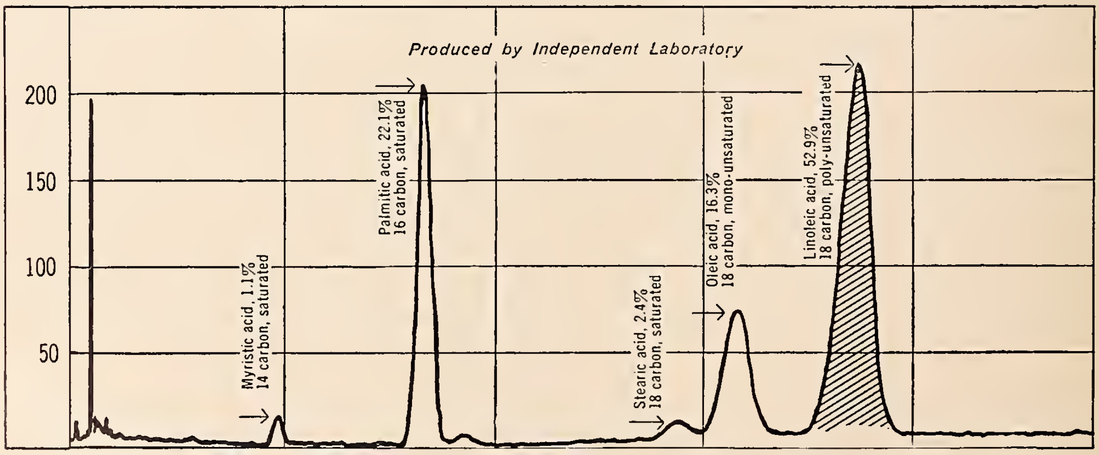
A significant statement about serum cholesterol and dietary fats

> “It is now well recognized that serum cholesterol levels in man can be lowered by the judicious substitution of one type of dietary fat for another. However, it is relevant to inquire whether a patient can be assured that such a radical change in his dietary habits will prevent coronary occlusion or a cerebral vascular accident. This question must unfortunately be answered in the negative, for it has not been proved that lowering the level of serum cholesterol will prevent either the occurrence or the end-results of atherosclerosis. At the present time, clear proof of this proposition still seems many years away. Nevertheless, there are many reasons for believing that there is some connection between cholesterol metabolism and atherosclerosis, and, while waiting for elucidation of this relationship by laboratory workers, it seems justifiable to apply certain dietary procedures that are theoretically harmless and possibly beneficial.”

Excerpted from J.A.M.A., Aug. 29, 1959

* * *

GAS CHROMATOGRAPH OF WESSON—the pure vegetable oil



Note High Linoleic Acid Content, 52.9% Poly-unsaturated.

FREE *Wesson recipes, available in quantity for your patients, show how to prepare meats, seafoods, vegetables, salads and desserts with poly-unsaturated vegetable oil. Request quantity needed from The Wesson People, Dept. N., 210 Baronne St., New Orleans 12, La.*

WESSON'S IMPORTANT CONSTITUENTS

Wesson is 100% cottonseed oil . . .
winterized and of selected quality

Linoleic acid glycerides (poly-unsaturated)	50-55%
Oleic acid glycerides (mono-unsaturated)	16-20%
Total unsaturated	70-75%
Palmitic, stearic and myristic glycerides (saturated)	25-30%
Phytosterol (predominantly beta sitosterol)	0.3-0.5%
Total tocopherols	0.09-0.12%

Never hydrogenated—completely salt free

Each pint of Wesson contains 437-524 Int. Units of Vitamin E

Where a vegetable (salad) oil is medically recommended for a cholesterol depressant regimen, Wesson is unsurpassed by any readily available brand.

To be effective, a diet must be *eaten* by the patient. The majority of housewives prefer Wesson,* particularly by criteria of odor, flavor (blandness) and lightness of color.

Uniformity you can depend on. Wesson has a poly-unsaturated content better than 50%. Only the lightest cottonseed oils of highest iodine number are selected for Wesson, and no significant variations in standards are permitted in the 22 exacting specifications required before bottling.

*Reconfirmed by recent tests against the next leading brand with brand identifications removed, among a national probability group.

Butazolidin®
brand of phenylbutazone

in arthritis and allied disorders

proved by a decade of experience

Ten years of experience in countless cases—more than 1700 published reports—have now established the eminence of Butazolidin among the potent non-hormonal antiarthritic agents.

Repeatedly it has been demonstrated that Butazolidin:
Within 24 to 72 hours produces striking relief of pain.
Within 5 to 10 days affords a marked improvement in mobility and a significant subsidence of inflammation with reduction of swelling and absorption of effusion.

Even when administered over months or years Butazolidin does not provoke tolerance nor produce signs of hormonal imbalance.

Butazolidin® brand of phenylbutazone: Red-coated tablets of 100 mg.
Butazolidin® Alka: Capsules containing Butazolidin® 100 mg.; dried aluminum hydroxide gel 100 mg.; magnesium trisilicate 150 mg.; homatropine methylbromide 1.25 mg.

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Geigy

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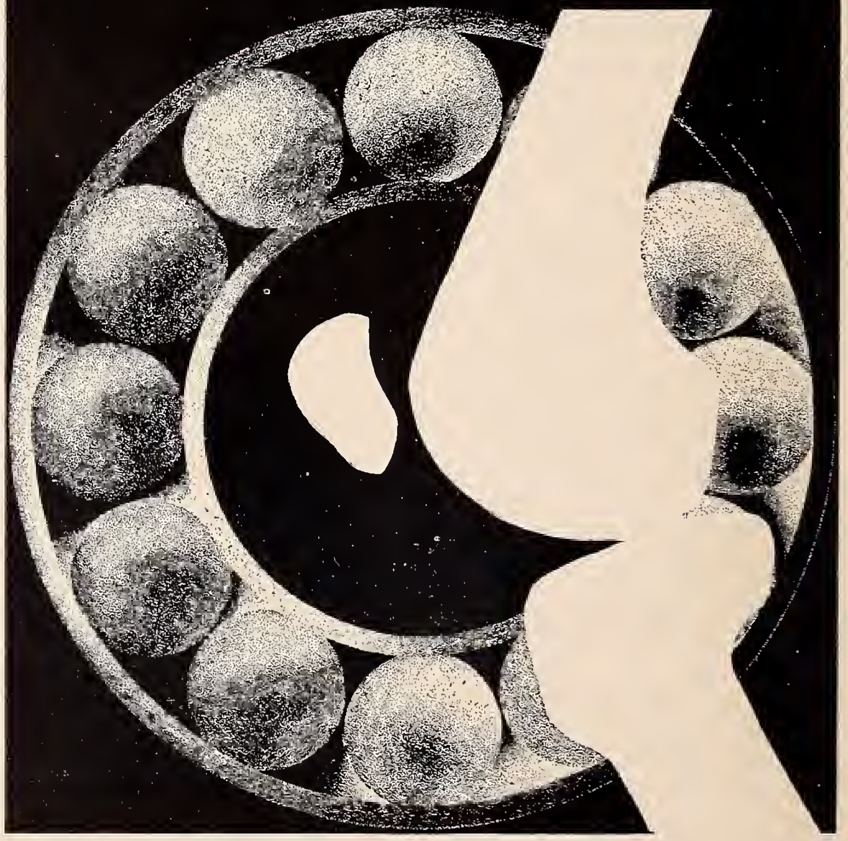

ONE *and only* ONE

Timed AMO*dex* CAPSULE

PER

DAY *will economically*

control appetite in weight reduction or relieve the nervous symptoms of anxiety and the underlying depression.

6-10 HOURS SUSTAINED THERAPY

Timed AMO*dex CAPSULES* (Testagar) furnish a controlled uniform action. The medications provide prolonged, continuous therapeutic effect from active ingredients over a period of 6 to 10 hours.

Following ingestion of one *Timed* AMO*dex CAPSULE,* small amounts of the medication are released immediately.

Each *Timed* AMO*dex CAPSULE* contains a daily therapeutic dose of:

Dextro-amphetamine hydrochloride	15 mg.,
Amobarbital	60 mg.

PROTRACTED THERAPEUTIC EFFECT

Before the development of *Timed* AMO*dex* (Testagar) the usual dose of Dextro-amphetamine hydrochloride, for the control of appetite, was one 5 mg. tablet two or three times a day. The usual dose of Amobarbital ranged from 20 to 40 mg., two or three times a day. On such a dosage regimen the absorption of the drugs, after ingestion, takes place quite rapidly. The therapeutic activity occurs within one-half to one hour. When the therapeutic peak is reached, a gradual decline takes place. At this point, the patient should receive another dose of medication . . . the cycle is then repeated.

Patients frequently fail to follow the physician's instructions. They take medication at irregular intervals. When this occurs with drugs such as dextro-amphetamine sulfate, phosphate or hydrochloride, excitation may result. A balanced combination of Dextro-amphetamine hydrochloride, **the preferred salt,** plus a balanced daily dose of Amobarbital will give the expected therapeutic results *without* excitation.

Timed AMO*dex,* after ingestion, releases Dextro-amphetamine Hydrochloride and Amobarbital steadily and uniformly over a period of 6 to 10 hours. Therefore, the physician may dispense with the usual dosage schedule thereby *attaining better control of therapy.* The patient will receive the benefits of even and sustained therapeutic effects. Side reactions such as anxiety and excitation are greatly minimized.

ACTION AND USES

Timed AMO*dex CAPSULES* (Testagar) supply the antidepressant and mood-elevating effects of Dextro-amphetamine hydrochloride and the calming action of Amobarbital. *Timed* AMO*dex* elevates the mood, relieves nervous tension, restores emotional stability and the capacity for mental and physical effort.

INDICATIONS

Timed AMO*dex* is the preferred treatment in anxiety states and in the management of obesity. *Timed* AMO*dex* may also be used in the treatment of Depressive states, Alcoholism, Nausea and Vomiting of Pregnancy.

DOSAGE The Daily Dose of *Timed* AMO*dex* (Testagar) IS ONE CAPSULE ON ARISING OR AT BREAKFAST.

SUPPLIED Bottles of 100 and 1000 capsules, available at all pharmacies. Also supplied in half strength as *Timed* AMO*dex,* Jr.

AMO*dex* ADVANTAGES

- HIGH-LEVEL ANOREXIGENIC ACTIVITY WITHOUT NERVOUS EXCITATION
- SMOOTH, UNIFORM ACTION
- THERAPEUTIC EFFECT LASTING 6 TO 10 HOURS
- ONLY ONE DOSE DAILY
- CLINICALLY ECONOMICAL TO THE PATIENT

Timed AMO*dex CAPSULES* are manufactured under these patent numbers:
2,736,682 – 2,809,916
2,809,917 – 2,809,918
Which provide prolonged, continuous therapeutic effect over a period of 6-10 hours

SAMPLES AND LITERATURE UPON REQUEST

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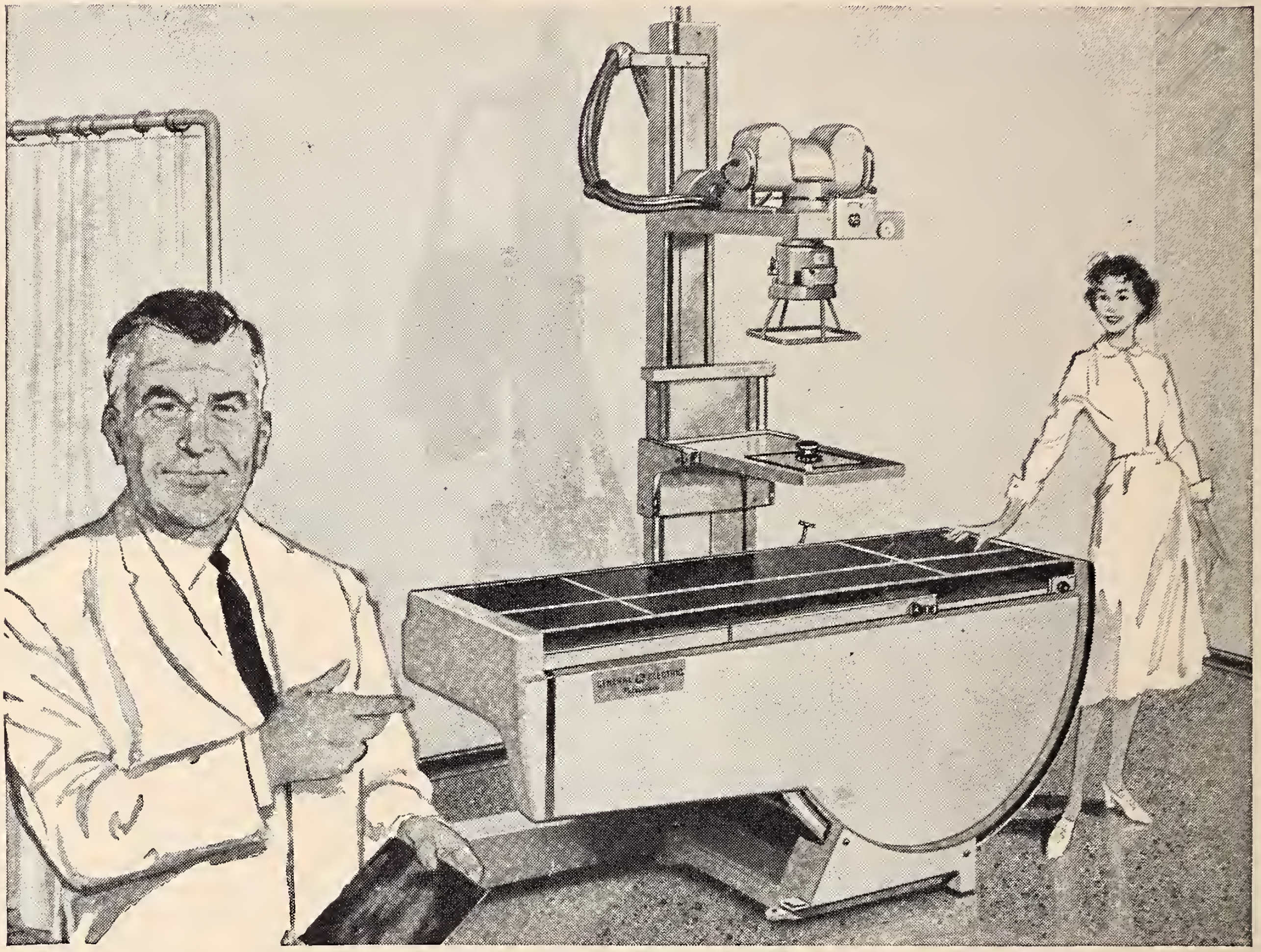
The choice of confidence...



diagnostic x-ray equipment planned for private practice!

Few who purchase x-ray equipment have time to thoroughly test the quality of materials, workmanship and technical performance offered by all the makes of x-ray units. And happily this is not necessary.

The manufacturer's *reputation* is worth more than anything else to you in choosing x-ray equipment, one of the most complex professional investments you will ever face.

General Electric has created "just what the doctor ordered" in the 200-ma Patrician, in terms of both reasonable cost and operating qualities. Here diagnostic x-ray is ideally tailored to *private practice.* Patrician provides everything you need for radiography and fluoroscopy — and with consistent end results, since precise radiographic calibration is as much a part of the Patrician combination as it is of our most elaborate installations. For complete details contact your G-E x-ray representative listed below.

Progress Is Our Most Important Product

GENERAL ELECTRIC

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Of course, women like "Premarin"®

THERAPY for the menopause syndrome should relieve not only the psychic instability attendant the condition, but the vasomotor instability of estrogen decline as well. Though they would have a hard time explaining it in such medical terms, this is the reason women like "Premarin."

The patient isn't alone in her devotion to this natural estrogen. Doctors, husbands, and family all like what it does for the patient, the wife, and the homemaker.

When, because of the menopause, the psyche needs nursing—"Premarin" nurses. When hot flushes need suppressing, "Premarin" suppresses. In short, when you want to treat the whole menopause, (and how else is it to be treated?), let your choice be "Premarin," a complete natural estrogen complex.

"Premarin," conjugated estrogens (equine), is available as tablets and liquid, and also in combination with meprobamate or methyltestosterone.

Ayerst Laboratories • New York 16, N. Y. • Montreal, Canada

5854

in infectious disease[17,22,30]
in arthritis[18,19,20]
in hepatic disease[2,3,4,5]
in malabsorption syndrome[1,2,4]
in degenerative disease[6,7,19,20]
in cardiac disease[23,28,29,30]
in dermatitis[24]
in peptic ulcer[8,21]
in neuroses & psychiatric disorders[25]
in diabetes mellitus[31,32,33]
in alcoholism[9,11,35,37]
in ulcerative colitis[10,14]
in osteoporosis[13,19]
in pancreatitis
in female climacteric[12]

Patients with chronic disease deserv
the nutritional support provided b

Theragran-M

Squibb Vitamin-Minerals for Thera

11 vitamins, 8 mineral
clinically-formulated and potenc
protected to provid

enough nutritional suppor
to do some good

with vitamins onl

Theragra
also availabl

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1-41 a list of the above references will be supplied on reques

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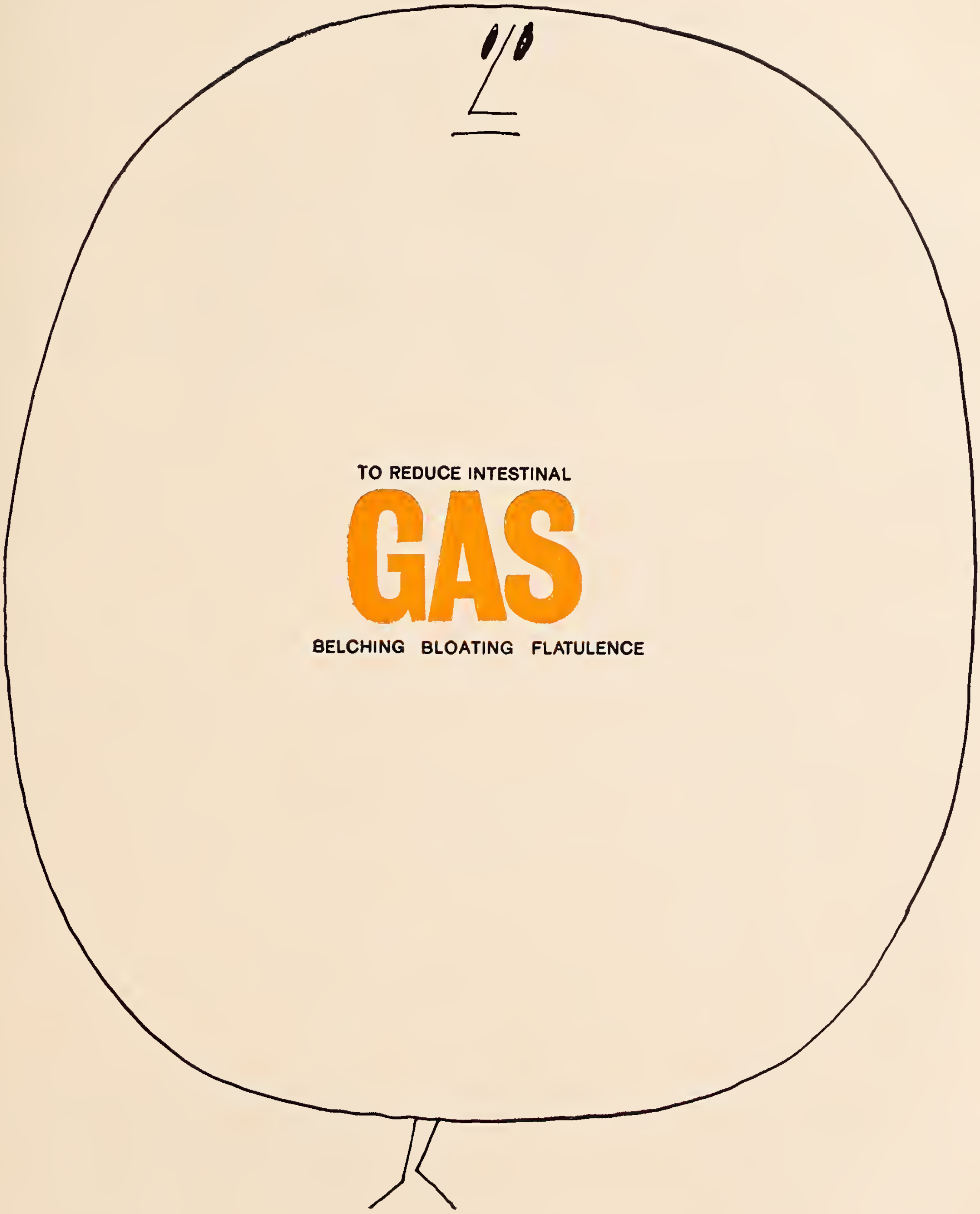
'THERAGRAN'® IS A SQUIBB TRADEMARK

Squibb Quality—the Priceless Ingredie



A biochemical compound used to diminish intestinal gas in healthy persons and those patients having digestive disorders ■

KANULASE

Each Kanulase tablet contains Dorase,* 320 units, combined with pepsin, N.F., 150 mg.; glutamic acid HCl, 200 mg.; pancreatin, N.F., 500 mg.; oxbile extract, 100 mg. Dosage: 1 or 2 tablets at mealtime. Supplied: Bottles of 50 tablets.

*DORSEY BRAND OF CELLULASE, EXPRESSED AS DIGESTIVE ACTIVITY UNITS.

SMITH-DORSEY • a division of The Wander Company • Lincoln, Nebraska

Today—as before—

Only Kent offers this remarkable combination:

FINEST NATURAL TOBACCOS

FAMOUS MICRONITE FILTER

Millions of smokers have changed to Kent because of this combination. They discovered that this combination was the reason why Kent satisfies your appetite for a real good smoke.

First, finest natural tobaccos. Kent uses *only* the finest natural tobaccos—ripe, golden leaves—which, when shredded into tiny strands and carefully blended, produce a real tobacco taste.

Second, Kent's famous Micronite filter which contains a remarkable series of flavor channels. The rich taste of natural tobaccos flows through with a free and easy draw. The Kent filter is not too long, not too short, not too tight—smokers get every delicate shading of flavor of Kent's finest natural tobaccos.

Others may imitate, but none can duplicate the quality of Kent.

If you would like the
booklet for your own use,
"The Story of Kent,"
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P. Lorillard Company
Research Department
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Today—as before—for good smoking taste, it makes good sense to smoke Kent, because Kent satisfies your appetite for a real good smoke.

A Product of P. Lorillard Company—First with the finest cigarettes—through Lorillard Research!

FOR ACNE

NEW pHisoAc* CREAM

Therapeutic topical application suppresses and masks lesions. Dries, peels, degerms the skin. Used with **pHisoHex®** (antiseptic detergent) washings to unplug follicles, help prevent comedones, pustules and scarring.

Teen-agers like new pHisoAc Cream. It is smooth, odorless, flesh-toned, and greaseless. It spreads and dries quickly. Ask the Winthrop representative for the special booklet, **"Teen-aged? Have acne? Feel lonely?,"** containing basic home treatment routine and psychological aid for the patient.

New pHisoAc Cream contains colloidal sulfur 6 per cent, resorcinol 1.5 per cent, hexachlorophene 0.3 per cent, orthophenylphenol 0.3 per cent, and alcohol 10 per cent (w/w). Available in 1½ oz. tubes.

*pHisoAc, trademark.

Winthrop LABORATORIES
New York 18, N. Y.

The first synthetic penicillin
available
for general clinical use

FOR YOUR NEXT PATIENT WHERE PENICILLIN IS INDICATE

SYNC

PEAK BLOOD LEVELS HIGHER THAN POTASSIUM PENICILLIN V	*ORAL ROUTE PROVIDES HIGHER INITIAL PEAK BLOOD LEVELS THAN INTRAMUSCULAR PENICILLIN G*	*IMPROVED ANTIBIOTIC ACTION FROM ISOMERIC COMPLEMENTARITY*

ONSIDER THESE 6 IMPORTANT THERAPEUTIC ATTRIBUTES OF

potassium phenethicillin (POTASSIUM PENICILLIN-152)

ANTIBIOTIC ACTIVITY DIRECTLY PROPORTIONAL TO ORAL DOSE

REDUCED RATE OF INACTIVATION BY STAPH PENICILLINASE

SOME STAPH STRAINS MORE SENSITIVE TO SYNCILLIN IN VITRO

BRISTOL

For topical infections, choose a 'B. W. & Co.'® 'SPORIN'...

'CORTISPORIN'®
brand **OINTMENT**

Combines the anti-inflammatory effect of hydrocortisone with the comprehensive bactericidal action of the antibiotics.

Each gram contains:

'Aerosporin'® brand Polymyxin B Sulfate	5,000 Units
Zinc Bacitracin	400 Units
Neomycin Sulfate	5 mg.
Hydrocortisone (1%)	10 mg.

in a special petrolatum base.

Provides comprehensive bactericidal action effective against virtually all bacteria likely to be found topically.

'NEOSPORIN'®
brand **ANTIBIOTIC OINTMENT**

Each gram contains:

'Aerosporin'® brand Polymyxin B Sulfate	5,000 Units
Neomycin Sulfate	5 mg.
Zinc Bacitracin	400 Units

in a special petrolatum base.

'POLYSPORIN'®
brand **ANTIBIOTIC OINTMENT**

Offers combined antibiotic action for treating conditions due to susceptible organisms amenable to local medication.

Each gram contains:

'Aerosporin'® brand Polymyxin B Sulfate	10,000 Units
Zinc Bacitracin	500 Units

in a special petrolatum base.

BURROUGHS WELLCOME & CO. (U.S.A.) INC., Tuckahoe, N. Y.

greater activity

unsurpassed G.I. toleration

sustained peak action

extra-day protection against relapse

NOW...THE EXTRA BENEFITS OF BROAD-SPECTRUM

DECLOMYCIN®

Demethylchlortetracycline Lederle

IN THE NEW, CHERRY-FLAVORED SYRUP

75 mg./5 cc. tsp., in 2 fl. oz. bottle—3-6 mg. per lb. daily in four divided doses

LEDERLE LABORATORIES, a Division of AMERICAN CYANAMID COMPANY, Pearl River, New York

275

ALPEN is the oral penicillin that provides on a fasting stomach peak antibiotic blood levels approximately twice as high as oral potassium penicillin V... and significantly higher than I. M. penicillin G.

Some strains of staphylococci resistant to other penicillins exhibit in vitro sensitivity to potassium phenethicillin.

ALPEN has greater freedom from the G. I. sequelae (overgrowth of resistant flora) sometimes observed with broad spectrum -mycins.

ALPEN gives much higher antibiotic levels within the first hour of ingestion by the well-tolerated oral route.

WHEN TO USE ALPEN Recommended in the treatment of infections caused by pneumococci, streptococci, gonococci, corynebacteria, and penicillin-sensitive staphylococci.

HOW TO USE ALPEN Depending on the severity of the infection, 125 mg. (200,000 units) or 250 mg. (400,000 units) three times daily may be used. In more severe or stubborn infections, a dosage of 500 mg. (800,000 units) t.i.d. may be employed. In beta hemolytic streptococcal infections, treatment should be continued for at least ten days.

PRECAUTIONS The usual precautions in the administration of oral penicillin should be observed. For further details see package literature.

Tablets: 125 mg. and 250 mg., bottles of 25 and 100. Powder for Oral Solution (lemon-lime flavored), 1.5 Gm. bottle (125 mg. per 5 cc. teaspoonful).

this is the tablet that gives higher peak antibiotic blood levels

HIGHER THAN I. M. PENICILLIN G
HIGHER THAN POTASSIUM PENICILLIN V

ALPEN

ALPEN™—potassium phenethicillin

Schering

Diagnostic Quandaries

Colitis? Gall Bladder Disease?
Chronic Appendicitis?
Rheumatoid Arthritis? Regional Enteritis?

A DISEASE that is frequently overlooked in solving diagnostic quandaries is amebiasis. Its symptoms are varied and contradictory, and diagnosis is extremely difficult. In one study, 56% of the cases would have been overlooked if the routine three stool specimens had been relied on.[1]

Another study found 96% of a group of 150 patients with rheumatoid arthritis were infected by *E. histolytica*. In 15 of these subjects, nine stool specimens were required to establish the diagnosis.[2]

Webster discovered amebic infection in 147 cases with prior diagnoses of spastic colon, psychoneurosis, gall bladder disease, nervous indigestion, chronic appendicitis, and other diseases. Duration of symptoms varied from one week to over 30 years. In some cases, it took as many as six stool specimens to establish the diagnosis of amebiasis.[3]

Now treatment with Glarubin provides a means of differential diagnosis in suspected cases of amebiasis. Glarubin, a crystalline glycoside obtained from the fruit of *Simarouba glauca*, is a safe, effective amebicide. It contains no arsenic, bismuth, or iodine. Its virtual freedom from toxicity makes it practical to treat suspected cases without undertaking difficult, and frequently undependable, stool analyses. Marked improvement following administration of Glarubin indicates pathologically significant amebic infection.

Glarubin is administered orally in tablet form and does not require strict medical supervision or hospitalization. Extensive clinical trials prove it highly effective in intestinal amebiasis.

Glarubin*

TABLETS

specific for intestinal amebiasis

Supplied in bottles of 40 tablets, each tablet containing 50 mg. of glaucarubin.

Write for descriptive literature, bibliography, and dosage schedules.

1. Cook, J.E., Briggs, G.W., and Hindley, F.W.: Chronic Amebiasis and the Need for a Diagnostic Profile, Am. Pract. and Dig. of Treat. *6*:1821 (Dec., 1955).

2. Rinehart, R.E., and Marcus, H.: Incidence of Amebiasis in Healthy Individuals, Clinic Patients and Those with Rheumatoid Arthritis, Northwest Med., *54*:708 (July, 1955).

3. Webster, B.H.: Amebiasis, a Disease of Multiple Manifestations, Am. Pract. and Dig. of Treat. *9*:897 (June, 1958).

*U.S. Pat. No. 2,864,745

THE S.E. MASSENGILL COMPANY
BRISTOL, TENNESSEE
NEW YORK • KANSAS CITY • SAN FRANCISCO

FOR SIMULTANEOUS IMMUNIZATION AGAINST 4 DISEASES:

Poliomyelitis-Diphtheria-Pertussis-Tetanus

PEDI-ANTICS

WHAT A PLEASANT SURPRISE!
OUR DOCTOR USED TETRAVAX... -TWO SHOTS IN ONE.
WELL, I DIDN'T LIKE IT!! IT WAS SNEAKY!!
YES!
WE ONLY GOT TO KICK UP ONE FUSS, INSTEAD OF THE USUAL TWO!
THAT'S BECAUSE YOU ONLY GOT ONE SHOT, INSTEAD OF TWO..!
WELL, I, FOR ONE, FEEL CHEATED..

TETRAVAX®

DIPHTHERIA AND TETANUS TOXOIDS WITH PERTUSSIS AND POLIOMYELITIS VACCINES

now you can immunize against more diseases...with fewer injections

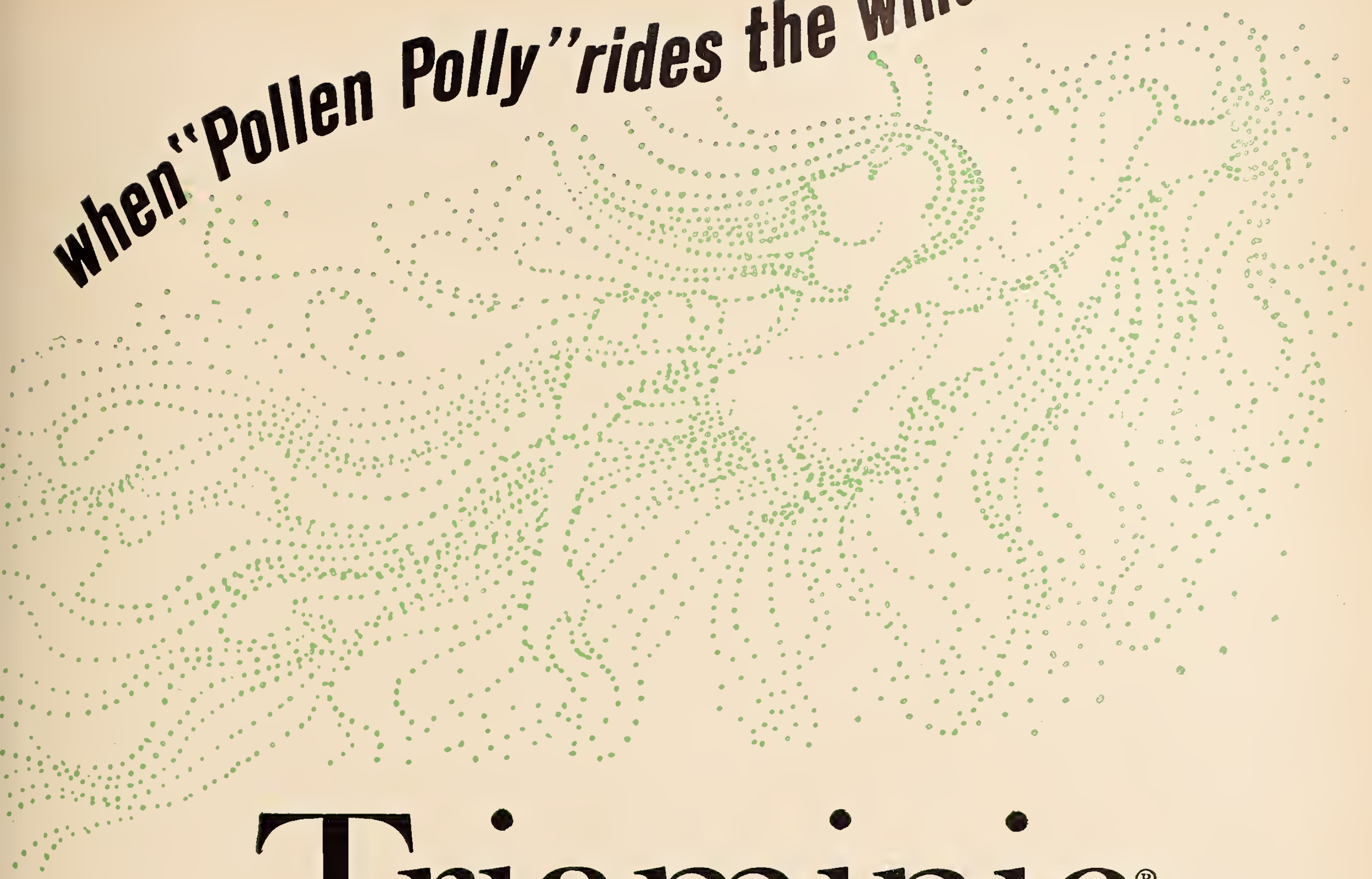
Dose: 1 cc.
Supplied: 9 cc. vials in *clear plastic* cartons. Package circular and material in vial can be examined without damaging carton. Expiration date is on vial for checking even if carton is discarded.

For additional information, write Professional Services, Merck Sharp & Dohme, West Point, Pa.

TETRAVAX IS A TRADEMARK OF MERCK & CO., INC.

MSD MERCK SHARP & DOHME, DIVISION OF MERCK & CO., INC., WEST POINT, PA.

when "Pollen Polly" rides the wind...



Triaminic®

...relief from pollen allergies

more complete than antihistamines alone...more thorough than nose drops or sprays

The miseries of respiratory allergy can be relieved so effectively with Triaminic.[1-5] Triaminic contains two antihistamines plus the decongestant, phenylpropanolamine, to help shrink the engorged capillaries, reduce congestion and bring relief from rhinorrhea and sinusitis.[1] Oral administration distributes medication to *all* respiratory membranes without risk of "nose drop addiction" or rebound congestion.[2,3]

Each Triaminic timed-release Tablet provides:

Phenylpropanolamine HCl	50 mg
Pheniramine maleate	25 mg
Pyrilamine maleate	25 mg

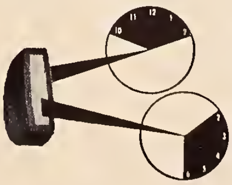
also available:

TRIAMINIC JUVELETS® ½ the formulation of the Triaminic Tablet with timed-release action.

TRIAMINIC SYRUP each teaspoonful (5 ml.) provides ¼ the formulation of the Triaminic Tablet.

References: 1. Fabricant, N. D.: E. E. N. T. Monthly 37:460 (July) 1958. 2. Lhotka, F. M.: Illinois M. J. 112:259 (Dec.) 1957. 3. Farmer, D. F.: Clin. Med. 5:1183 (Sept.) 1958. 4. Fuchs, M.; Bodi, T.; Mallen, S. R.; Hernando, L., and Moyer, J. H.: Antibiotic Med. & Clin. Ther. 7:37 (Jan.) 1960. 5. Halpern, S. R., and Rabinowitz, H : Ann. Allergy 18:36 (Jan.) 1960.

Relief is prompt and prolonged because of this special timed-release action



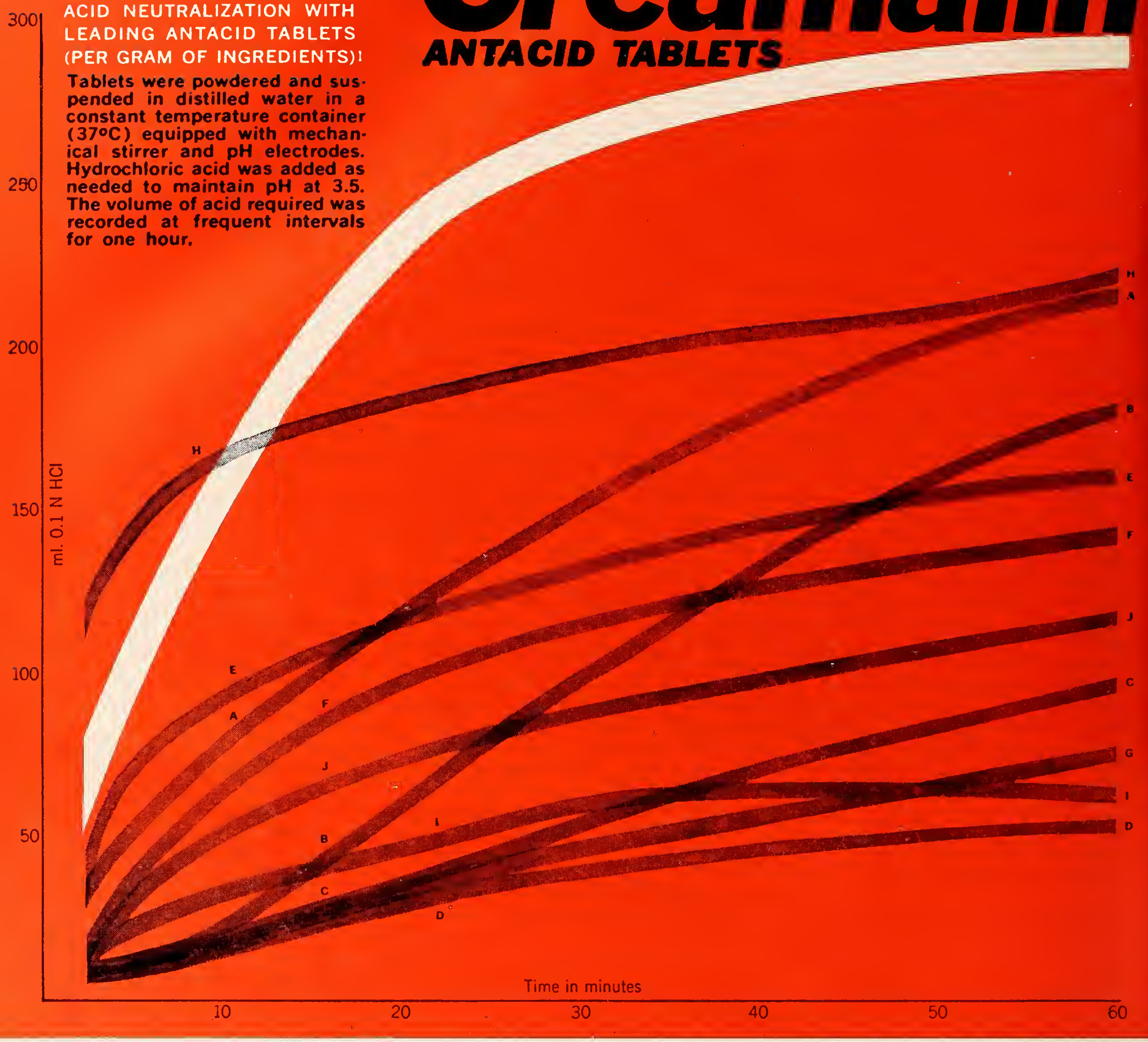
first—the outer layer dissolves within minutes to produce 3 to 4 hours of relief

then—the core disintegrates to give 3 to 4 **more** hours of relief

SMITH-DORSEY • A DIVISION OF THE WANDER COMPANY • LINCOLN, NEBRASKA

More gastric acid neutralized faster...with new Creamalin®

ANTACID TABLETS



ACID NEUTRALIZATION WITH LEADING ANTACID TABLETS (PER GRAM OF INGREDIENTS)[1]

Tablets were powdered and suspended in distilled water in a constant temperature container (37°C) equipped with mechanical stirrer and pH electrodes. Hydrochloric acid was added as needed to maintain pH at 3.5. The volume of acid required was recorded at frequent intervals for one hour.

GREATLY HEIGHTENED REACTIVITY to acid characterizes the action of New Creamalin Antacid Tablets.[1,2] They act faster and longer than other leading tablets and neutralize considerably more acid.[1] These tablets provide virtually the same effects as a liquid[2] with the convenience of a tablet. New Creamalin tablets give faster, greater and more prolonged relief.

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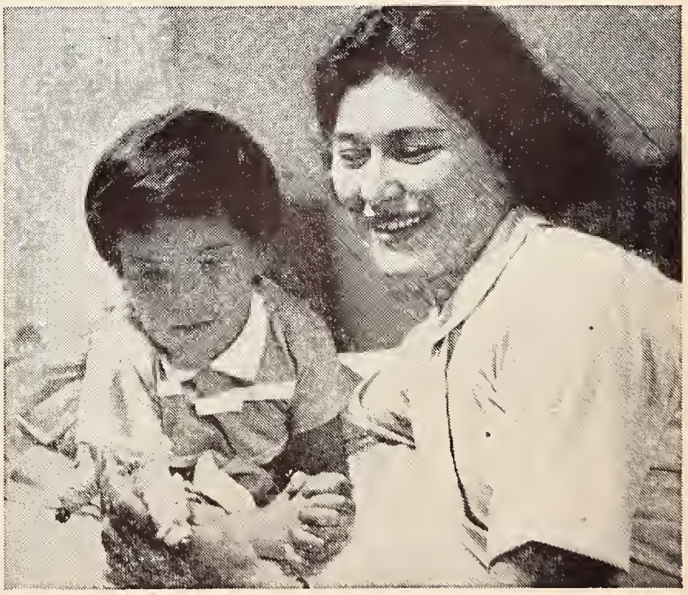

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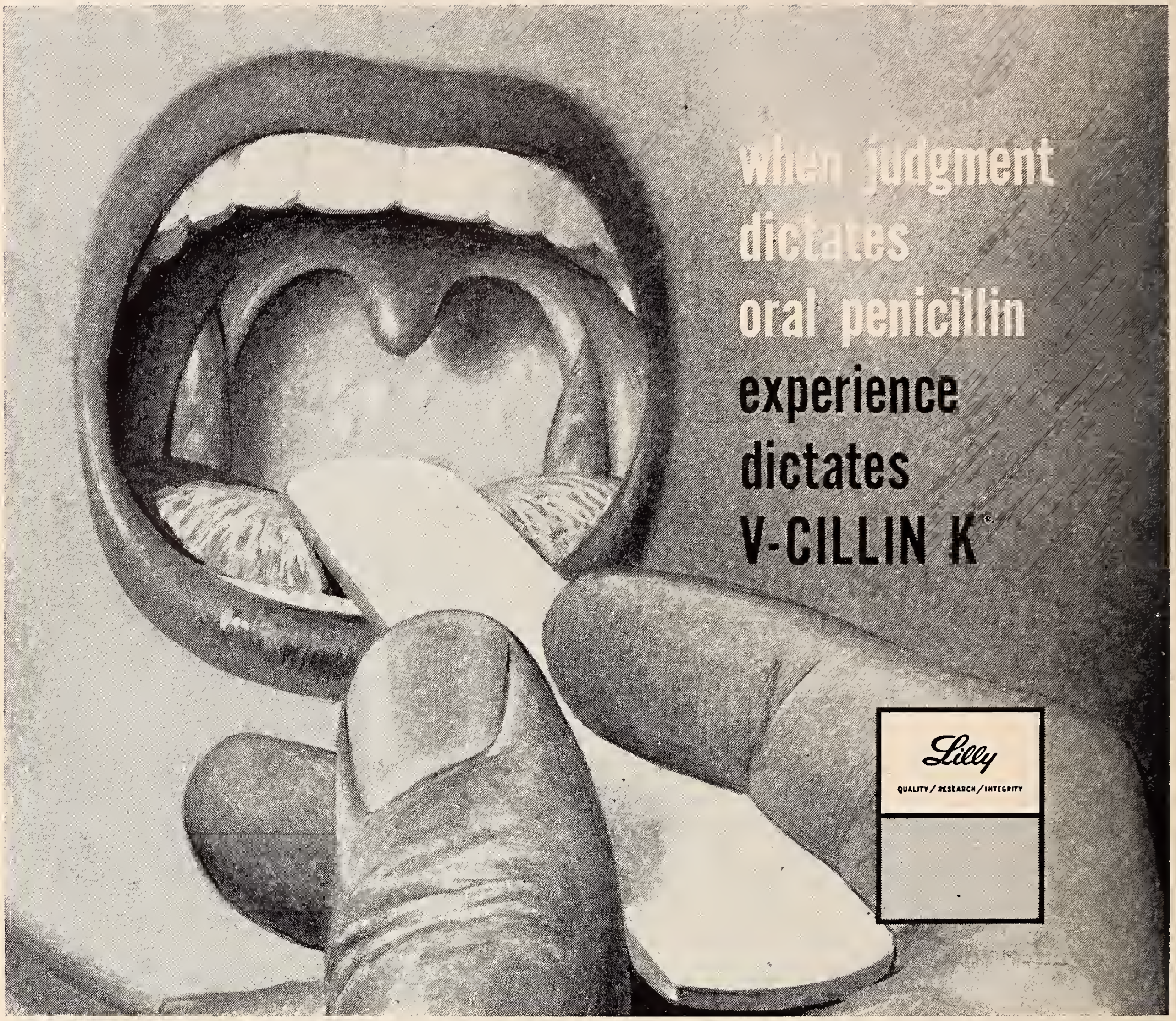

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Original Articles

ARIZONA MEDICINE

VOL. 17, NO. 5 MAY, 1960

Solitary Pulmonary Nodules*

A NEW METHOD FOR DIAGNOSIS OF SOLITARY LESIONS OF THE LUNG

L. Henry Garland, M.D.

Clinical Professor of Radiology
Stanford University Medical School
San Francisco

MR. CHAIRMAN and members, I am honored to be with your group. As one of your speakers said yesterday, these meetings are stimulating because you meet teachers from other parts of the country and find out what, if anything, they are up to.

Concerning this morning's talk on solitary nodules of the lung, I would like to make two points clear. First, anything I personally know about them is thanks to some hardworking surgeons and pathologists. Secondly, the best available treatment for localized cancer of the lung is prompt excision.

We estimate that about one quarter of primary bronchial carcinomas come to a doctor when they manifest themselves as a solitary nodule — that is to say, a nodule lying more or less within the lung parenchyma, up to about 6 cm. in diameter, and more or less circular or ovoid. This group represents potentially those with the best chance of cure.

Now the proportion of these solitary nodules that prove to be carcinoma varies with the sample studied. In unselected surveys it is about 3 per 100,000; and in selected surveys, say of male populations in veterans' hospitals, it runs up to 30 per 100,000. When you see a nodule, your immediate problem is to try to decide quickly: Is this probably cancer, or is it probably not cancer. Because if it is probably cancer, you ought to waste no time. In the past we have had a somewhat pessimistic attitude toward this matter, feeling that the only way to tell is to remove it. We encountered in two of our hospitals in San Francisco a sufficiently high morbidity, and believe it or not, in the last couple of years, a small mortality, removing benign nodules — this obviously is an inefficient method of differentiation. For that reason, we looked over our material to see if we could establish some means of non-surgical identification.

When Lady Macbeth was sleepwalking, the doctor said to a gentlewoman in her chamber, "You see, her eyes are open." The gentlewoman replied, "Aye, but their sense is shut." Then Lady Macbeth comes in and says, "Yes, here's a spot. Out, damned spot! Out, I say." Well, this is what we used to say, too, "Out, damned spot," but it's not wise.

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*Abstracted from a presentation at Seventh Annual Cancer Seminar of the Arizona Division American Cancer Society January 22-24, 1959 — Phoenix.

Now in a review I published recently covering about 2000 solitary nodules, the proportion of those malignant was about a quarter (25%). The range was 16 to 37. I was therefore surprised to read in U. S. Public Health Reports a year or two earlier that in a mass survey in Cleveland of almost 2,000,000 people in which 666 nodules were found, only 3% were malignant. Last year Taylor, from the Fitzsimmons Army Hospital, reported on 236 nodules, of which about 10% were malignant. The answer, of course, is that some are selected hospital groups, often with surgical orientation; and some are unselected, with young as well as old people.

Now, when you see a solitary pulmonary nodule on a roentgenogram, you ask: "Is this benign or malignant?" If it is benign, it may be any of the granulomas (In this part of the country, coccidiomas and histoplasmomas; in San Francisco, tuberculomas and coccidiomas; in Florida, tuberculomas and blastomycomas) or a circumscribed patch of pneumonitis or an abscess, a hamartoma or an adenoma. (Some adenomas are malignant, or at least metastasize, or are functioning carcinoids; but fortunately only about 10% of adenomas manifest themselves as solitary nodules; and in our experience, practically all of these were benign.) Cysts can manifest as solitary nodules; likewise sequestration.

Using the criteria to be outlined, we "fail" about 7% of the time and cannot classify the lesions as "benign" or "malignant".

ILLUSTRATIVE CASE REPORTS:

CASE 1. Here is a business man, age 54, with no pulmonary symptoms. A routine chest roentgenogram shows a sharply circumscribed nodule in the middle third of his right lung. He smokes modestly.

Tomograms showed central calcification. Tomograms were made on the same day as the routine films, as they should be. The examination ought to be completed at that time, just as you would complete your study of the blood pressure, or pulse, or what not, the first time you see the patient, if you are able to. This has all the earmarks of a benign lesion.

His tuberculin was found to be positive, his histoplasmin 3+, his coccidioidin 1+. So these did not help too much. However, the lesion is obviously sharply circumscribed and with central calcification. Therefore, it is a benign lesion, either a hamartoma or granuloma.

In spite of his wife's urging and my recomenmendation, he had it removed. And it was indeed a granuloma, type undetermined. A week later he developed atelectasis of the lower lobe and an infected effusion, which happens about 5% of the time. He had quite a bit of disability for about two months and thoracic scar pain. This, I think, is no longer necessary.

CASE 2. Here is a roentgenogram of one of our janitors at the hospital. A routine chest x-ray shows a right paratracheal opacity, smooth, oval; in a heavy density film it has some calcium. His tuberculin is positive. He lives in a poor part of town. He is entitled to have or have had tuberculosis. He weighs 250 pounds and has no symptoms.

He saw a Chief Surgical Resident, who told him he might have a cancer there. This is true it might be a thymoma, lymphoma or many things. So he urged him to have it operated upon, but the fellow refused.

He went home and brooded on this potential cancer for about four months, increasing his alcohol intake to quite a respectable degree. He finally lost his job on account of the latter, and then he agreed to hospitalization.

A roentgenogram made about four months after the initial film shows, if anything, the density to be a little smaller. This lesion obviously has not increased in size. It has calcium in it, and it's probably a mass of tuberculous nodes. But he would have an operation now.

It was indeed a tuberculous node, which broke at operation. He got a tuberculous mediastinitis and had a very stormy time. He then slowly got back on his feet but with persistent pain in his right arm. And he is now a professional welfare client. Can't work. His right arm hurts him, his chest hurts him, and so forth.

CASE 3. This is a fireman, aged 40. This fireman had his annual medical examination and was found to have a nodule in the left upper lung field. It has partly fuzzy borders, but the lateral border is sharp. There are streaks going to the hilum. The previous films had been lost. Stereoscopic films show that he has other opacities in this area, some of them with calcium. So this is not a solitary nodule. He saw a very good young doctor, who told him, "Now look, you're 40, you've been smoking heavily for 25 years. You must have this out quickly because this must be a tumor."

So he was operated on (his tuberculin, incidentally, was positive); and on attempting to remove this segment of the left upper lobe, they ran into trouble. Either the planes of cleavage were poor, or there was some other trouble; so they decided to remove the whole lobe. In removing the whole lobe, they nicked the left pulmonary artery accidentally. Well, he wasn't in too good shape. He died on the second postoperative day, of a right pulmonary embolus. The pathologic report of the tissue was 'tuberculoma'.

CASE 4. The next case concerns a middle-aged man. He had a little cough, no hemoptysis, no weight loss. His xrays showed disseminated bilateral nodular lesions, some with calcium. You would ask the man if he had done any mining. He had, for 30 years, in Nevada – hard rock mining. Does he have any sputum? Yes, he does, but it's negative for acid-fast or tumor cells. And this is just a localized area of progressive massive fibrosis such as you often see in silicosis. However, he was taken to surgery to have this tumor out. He died the next day. It was an area of fibrosis and silicosis.

At Letterman Army Hospital in 60 consecutive cases of solitary nodules, the operative morbidity was 10% – two bronchopleural fistulas, one persistent hemorrhage, one empyema, one pneumonia and two painful thoracic scars – there was no mortality.

Davis, in about 240 cases at Washington, had a 5% morbidity – six bronchopleural fistulas, seven empyemas, two reactivations of tuberculosis.

CASE 5. A few years ago a 40-year-old male was operated on at Letterman Army Hospital because of a left parahilar nodule. The frozen section was interpreted by a very good pathologist as carcinoma, so he had his left lung out. The fixed section was interpreted as normal lung tissue! The final diagnosis by the Army Institute of Pathology was thymoma. His subsequent course has been that of a benign thymoma.

CASE 6. We had a woman at the San Francisco Hospital with a right upper lobe nodule. Our impression was benign lesion. Surgeon's impression: tumor, primary, malignant. It shelled out nicely and was interpreted as inflammatory process. Fixed section was interpreted as anaplastic carcinoma. Final section showed a mesothelioma, benign. Subsequent course: benign.

CASE 7. A telephone operator of 30 had had a left lower lobe nodule for some years for which she refused exploration. We had followed her. We thought it was a adenoma. She had no trouble from it until her father died of bronchial cancer. Then she had pain. So it was removed. It was interpreted as oat cell carcinoma. We knew it couldn't be that. It had been there seven years. Then they changed the diagnosis to neuroblastoma; same pathologist, same hospital. And then Doctor Liebow changed it to carcinoid. Her subsequent course is that of a benign carcinoid, non-functioning.

The foregoing examples are presented just to remind you that histopathology is no more a refined science than is radiology.

Finally, surgical exploration is not always the answer.

CASE 8. A 45-year-old male had a silent ovoid mass in the right upper anterior chest, a nodule with fuzzy borders. This is bronchial cancer until proven otherwise. We coaxed the surgeons to explore him immediately which they did, and they found nothing. They closed him up.

We told them that they had missed it. They replied, "Well, we won't explore him again; he's too old." He died with a bronchial cancer in about 18 months. His lesion was well anterior, and by bad luck they had missed it at exploration. This is an additional reason, I think, for trying to make your mind up about these nodules ahead of time and going ahead with your surgical procedure, almost come what may.

When confronted with a solitary nodule on a chest roentgenogram, our method of diagnosis consists in an orderly and comparatively speedy three-step procedure based on *radiological, clinical* and *laboratory* examination. The first two steps often can be completed at the time of the patient's first visit; the third may require the lapse of a few days. The radiological step is listed first because most "coin" lesions are first detected as "silent" pulmonary roentgen shadows.

The radiological examination is completed in accordance with the suggestions outlined in the preceding paragraphs, the following specific data being sought and recorded:

Is the opacity a true solitary pulmonary nodule, as defined?

Are its margins sharp, fuzzy, umbilicated or otherwise?

Do fine strands or linear opacities extend from the opacity to the hilum or parietal pleura; are there small adjacent or satellite nodules?

Is there calcium in the opacity; if so, is it central or marginal, laminated or "popcorn" like?

Is there any record of prior chest x-rays and, if so, what did these reveal? And on what dates?

Clinical information can often be obtained during the radiological study. Age, sex, symptoms relative to thoracic disease, and history of recent thoracic surgery is recorded. Enquiry is made concerning use of nasal oil medication, and residence in certain areas (such as the San Joaquin Valley, the Kansas-Missouri area, etc.)

The laboratory examination varies considerably in scope and timing, according to the circumstances present in the individual case, and the judgment of the referring physician. It may therefore be some time before it is possible to enter these particular data on the "3 step chart," and indeed it may be decided that such can be dispensed with.

The following points should then be recorded:

1. Radiological:

Margin (sharp, fuzzy, umbilicated, other)...
Strands (to pleura or hilum) or satellites...
Calcium (central or marginal, laminated, etc.) ....
Present at previous date . . . (and change, if any)....

2. Clinical:

Age (note especially if over 45)
Sex....
Symptoms or thoracic lesion or recent respiratory infection....
Recent thoracic surgery or history of tumor elsewhere....

3. Laboratory:

Skin or complement fixation tests for
tuberculosis....
coccidioidomycosis....
histoplasmosis....
Sputum tests (in selected cases) for
bacteria....
tumor cells....

If the radiological findings disclose a sharply marginated calcium, containing opacity and the patient is a female under 35 without symptoms, the great probability is that the nodule is a benign process (granuloma, cyst or benign tumor). Conversely, if the opacity has fuzzy margins and no calcification, and the patient is a male age 60, without symptoms or history of recent respiratory or cardiac disorder, the great probability is that the nodule is due to malignant process (primary bronchial carcinoma). There are, of course, degrees of variation in the clarity or decisiveness of the various criteria listed, but with practice, one can make reasonably terse and reproducible decisions, which will permit reaching a tentative and usually valid diagnosis.

Some of these criteria are discussed in the following section.

RADIOLOGIC CRITERIA

Sharpness of margin. The majority of granulomas, benign pulmonary tumors and cysts have relatively sharply defined borders; the majority of primary malignant tumors have relatively indefinite or "fuzzy" borders. This point is best appreciated in carefully made, fine-detail stereoscopic roentgenograms, and in tomograms. The nodule may present sharp margins on one projection (e.g., the lateral) but not in the other (e.g., the PA view — especially when the opacity is located dorsally in a thick chest). The sharpness is usually the "dominant" finding, and favors benignancy. "Nodules" that project as a "fan", or aggregation of linear opacities in one view are usually inflammatory; they are not true circumscribed lesions and are not considered in our series. Umbilication of one margin of the nodule has not proved a valuable clue in our experience; it has been seen in benign as well as malignant lesions.

Strands and nodules. Small linear densities connecting the nodular opacity with the pleura or with the hilum are more suggestive of inflammatory than neoplastic disease. However, small strands radiating out into the pulmonary parenchyma for a short distance occur more frequently with neoplasm than granuloma. Small satellite nodules may be seen on careful examination of stereoscopic or tomographic films. These may be associated with granulomas or primary pulmonary tumors (notably adenocarcinomas and bronchiolar carcinomas). Stereoscopy has permitted the detection of multiple tiny metastases elsewhere in the lungs in some patients initially regarded as having solitary nodules.

Calcium. Nodules should be examined with care for the presence or absence of calcium. Slightly over-penetrated stereoscopic projections, oblique projections and tomograms are of value in determining this point. Calcification may be central or marginal, diffuse, nodular or laminated. In patients who do not have pulmonary calcification elsewhere (e.g., due to histoplasmosis, tuberculosis, etc.), the presence of calcium in a nodular lesion has been a reliable sign of benignancy in our experience. However, in a few patients with chronic or obsolete inflammatory disease, and associated pulmonary calcification, we have been deceived by nodular opacities with calcium in their periphery . . . assuming them at one time to be granulomas, but finding out that they were independent primary carcinomas arising contiguous with a calcified parenchymal focus.

O'Keefe, Good and McDonald[1] note that there is a difference between the demonstrability of calcium in the living patient, and in the surgical or post-mortem specimen. As happens with many other tissues, minute areas of calcification will not be demonstrable in vivo but are readily demonstrable in detailed radiography of the resected specimen. In their report of 135 benign lesions (granulomas, hamartomas, etc.) there was radiologic evidence of calcification in 36% in the preoperative roentgenograms, and in 50% in the resected specimen films. Conversely, in 72 malignant nodular lesions (mostly primary bronchial carcinomas), calcium was visible in only *1% of the preoperative roentgenograms* but in 13% of the resected surgical specimen roentgenograms. In their experience when the calcification was laminated or popcorn-like, the lesions were invariably benign; when it was central or punctate, one of the cases proved to be a malignant tumor.

Davis, Peabody and Katz[2] report that when a solitary nodule shows diffuse calcification, a large core of calcification, or laminated calcification, it usually proves benign. They state that it is their policy "to leave such a nodule alone unless it increases in size or shows other evidence of instability" and they endorse Carr's observation that while "calcium does not absolutely rule out malignancy, its presence within a malignant solitary nodule is so rare that the chance of its being benign is better than the probability of cure by resection if malignant."

Previous films. One of the useful steps in assessing the significance of a solitary nodule is the securing of such previous films and reports as are available, in order to determine the apparent duration and the presence of change in the nodule. An enlarging pulmonary nodule in an adult is more apt to be malignant than benign. On the other hand, a small percentage, perhaps 20%, of primary bronchial carcinomas, grew very slowly for the first few years of their demonstrable life and therefore absence of evidence of growth does not exclude neoplasm. A fairly dense nodule that has been present for over three years without change in size is almost always benign. Nodules that arise within a matter of months must be viewed with gravity, and steps taken for prompt identification.

Clinical criteria. Age. The frequency of primary bronchial carcinoma has been greatest, in our experience, between the ages of 50 and 70. It has been rare under the age of 40. Therefore, age has been a useful clue to the probable nature of a given nodular opacity. We have set 45 years as an arbitrary dividing line between relative infrequency and frequency of malignancy in solitary nodules. Davis et al., do not ascribe much value to age, but their own series of 215 patients with solitary nodules showed that 90% of the bronchial carcinomas were found in persons over 40 years of age.

Sex. In the individual case, sex is of course not a decisive factor. However, since bronchial carcinomas are approximately five times as frequent in males as in females, the sex of the patient does yield a slender clue.

Symptoms. The presence or absence of symptoms has proved useful in the identification of some solitary nodules. Five of the recent patients in our series had had preceding episodes of cough, fever, and other signs of lower respiratory infection. At the time of our examination their solitary nodules represented the residual areas of unresolved pneumonitis. In the light of their associated findings (age, sex, and so forth) the patients were observed and the opacities completely disappeared. In the earlier years of this study, four similar cases had been subjected to resection; the pathologic report in three was chronic focal pneumonitis, and in one granuloma. Symptoms of chronic nasal catarrh proved of value in two patients; both admitted using oily nose drops, were under age 40 and the possibility of focal lipid pneumonitis was suggested; this proved correct on resection.

Previous surgery. In three patients with solitary nodules, a history was obtained of recent thoracentesis or pulmonary biopsy. The nodule proved to be a small hematoma in two cases. In the third, the lesion disappeared in about four weeks and was preseumed to have been of similar origin.

Laboratory Criteria. Laboratory examinations are obviously of limited value in the identification of solitary nodules. However, in persons under 40, they have proved useful at times. For example, in a soldier age 23 with a small circumscribed nodule containing a fleck of calcium, the tuberculin, coccidioidin and histoplasmin tests were all negative. The possibility of hamartoma was therefore suggested and this was confirmed at surgery. In other young patients (under 30) one of these three skin tests may be strongly positive and the other two negative, the lesion proving to be a granuloma of the type adumbrated by the positive skin test. Example: D. D., male, 29, with silent solitary nodule in right middle lung field, discovered in Army separation film. Tuberculin and histoplasmin skin tests negative. Coccidioidin positive. Had been a resident of the San Joaquin Valley. Diagnosis: Coccidioma. Operation disclosed same.

However, specific granulomas (e.g., coccidiomas) have been found despite negative skin tests. In some such cases, the complement fixation test was positive. Bacteriologic examination of the sputum has not proved of value, but could be if a superficial tuberculous lesion in a bronchus accompanied a tuberculoma. Cytologic study is usually negative with true "coin" lesions. Histologic examination of removed upper mediastinal or supraclavicular nodes was performed in a few cases and, as might be expected with this localized pulmonary lesion, was usually not informative.

You can put the data in chart form for use in hospital or office. You check off these various points. If you use the chart, it will make you *do* it; and it will aid in identifying many of these lesions rapidly.

These are the results in 105 consecutive cases. There were 65 that we labeled as "benign" by this 3-step method. We were right 63 times and wrong twice. There were 32 labeled "malignant." We were right 28 times and wrong four times. There were eight unclassified.

These were the errors. The two benign lesions were malignant tumors. This is a bad error, but two out of 65 isn't much higher than the histopathologic error. There were four we called malignant that were not, thank goodness. Three of them were granulomas, one benign. This is an error, but it is an error on the less dangerous side.

Now the eight unclassified cases teach me, personally, that if I cannot classify them, they ought to have immediate surgery, because half of those were malignant. Three were granulomas, and one was a benign tumor.

So don't be like Lady Macbeth. Don't say, "Out, damned spot." Study the patient and the xrays and you will save morbidity. And I think you will diagnose most of these nodules correctly.

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"MARCH OF MEDICINE"

The practice of medicine in widely scattered regions of the United States will be the subject of a special hour-long documentary to be telecast over the NBC-TV network on Friday, May 27, at 8:30 p.m. (EST).

The program, to be telecast in color as well as black and white, is another in the award-winning "March of Medicine" series produced and sponsored by Smith Kline & French Laboratories in cooperation with the American Medical Association. Sequences were filmed in Alaska, Arizona, Louisiana, Pennsylvania and Wisconsin.

The Surgical Abdomen in Pregnancy*

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Signs and symptoms may be modified or masked during pregnancy. Every physician doing obstetrics must be ever mindful of the differential diagnosis. An important comment is made about use of x-ray during pregnancy.

IN APPROACHING any problem that involves the pregnant as opposed to the non-pregnant woman, whether it is surgical, medical, or obstetrical, there are certain generalities which must constantly be kept in mind. The first, and probably the most important to the surgeon, is the progressive displacement of the abdominal viscera by the growth of the pregnant uterus. This results in a constantly changing position and relationship of the various abdominal structures. It also causes varying degrees of discomfort and at time, actual pain by stress and tension on certain tissue structures, such as muscles and ligaments. It becomes increased toward the latter part of pregnancy when uterine size and accompanying volume is at its greatest. Second, with our present knowledge, we have come to recognize an ever-enlarging number of modifications of physiological functions during pregnancy. This includes the so-called physiological anemias, the relative leukocytosis, the increased blood volume, and the multiple alterations in function of the glands of internal secretion, to mention a few examples. Finally, there are the many psychologic and emotional changes which cannot be overlooked in arriving at a diagnosis or carrying out treatment, either surgical or otherwise, in the pregnant female.

For simplification in the present discussion, the various complicating factors which could conceivably require intervention by abdominal surgery in the pregnant woman should be divided into two main groups. The first includes only those conditions which are directly related to the pregnancy itself. All other causative agents, including conditions coincidental to or accidentally associated with a pregnancy, are placed in the second of these two main groups.

GROUP I

Although this discussion is primarily concerned with the accidental complications found in the abdomen during pregnancy, there are several surgical conditions directly due to the pregnancy itself which should receive at least brief consideration, even among the general surgeons. By far the most important of these associated with early pregnancy is the so-called ectopic, or preferably tubal, gestation. It may manifest itself in so many ways that in the presence of any pelvic condition in a woman of childbearing age, even in the absence of a disturbed or modified menstrual period, the question of a possible ectopic pregnancy must be ever foremost in the mind of the examiner.

As opposed to the laboratory findings and those obtained by curettage which are helpful in a comparatively small per cent of these patients, the most valuable diagnostic procedure, in our opinion, is the posterior culpotomy. The presence of free blood in the abdomen can be demonstrated by this method. The adnexa can be palpated digitally and even fairly extensive pelvic surgery can be carried out through this same opening, as shown by Bradbury and others.

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*Presented before the 1959 meeting of the Ogden Surgical Society. (Recorded and published in conjunction with the Rocky Mountain Med. Jour.)

Surgery is the indicated treatment in all patients with tubal pregnancy. Salpingectomy and occasionally more extensive surgery may be necessary. An associated appendectomy should be avoided in the majority of these patients. The only two patients in this series, in which tuboplasty was attempted, as suggested by Stromme and Thompkins, required a second operation. One word of warning in connection with this complication, which cannot be too frequently emphasized, is the routine check of the Rh factor, previous to all transfusions in patients such as these. In all emergencies, when time does not permit, Rh negative Group O blood only should be employed.

Among the surgical complications of the late gestational period directly due to the pregnancy itself there is, on rare occasions, one associated with placenta accreta which should be called to the attention of the general surgeon. In the presence of a so-called precreta, the placental villae may actually perforate the uterine wall, involving the neighboring structures. There were none of these in this particular series, but two such cases were recently reported at the San Francisco Gynecological Society. In both patients, severe bladder symptoms appeared with an associated hematuria. Both required hysterectomy with partial removal of the bladder wall.

Two other conditions in this group, which do not warrant detailed discussion at this time, but with which anyone doing surgery should be conversant, are uterine rupture and abdominal pregnancy. Both are serious complications of pregnancy and both at times may become dire emergencies requiring immediate surgical interference. Of the former, there were but three in our series. All followed previous cesarean section. This complication is included primarily to call attention to the frequent presence of an associated hematuria. In a recent presentation, the late Dr. Cooley emphasized this finding as a definite diagnostic symptom. As to the second of these two complications, it is mentioned primarily to emphasize the importance of leaving the placental bed undisturbed at all times in the patient in whom this complication is found.

GROUP II

As opposed to the first major group, the second includes those surgical complications of the abdomen coincidental to the pregnancy. No attempt will be made to subdivide this group. It becomes rather a question of increasing difficulty in both diagnosis and treatment of many of the same complications in the more advanced stages of pregnancy and the early puerperium. This is probably true to a lesser degree in acute complicating lesions of the upper abdomen. Conditions such as acute gallbladder and perforated duodenal ulcer should be handled both as to diagnosis and treatment in a manner similar to that in the nonpregnant patient, according to Walker and Greany. However, according to these authors, one must keep continually in mind that all patients in this group have become so accustomed to various forms of abdominal discomfort, especially in late pregnancy, that they fail to complain of any real symptoms much later than the nonpregnant woman.

Acute appendicitis: Most authors agree that acute appendicitis is still the most common extra uterine complication requiring abdominal surgery. In spite of modern hospitals, radical surgery and antibiotics, Varney points out that disease of this organ still kills 217 persons monthly, according to the Bureau of Vital Statistics. Thus, all operators are uniform in their opinion that only early diagnosis and prompt surgical interference can avoid a serious outcome for both mother and child in the presence of an acute appendicitis. This requires constant suspicion of this condition, especially in the second and third trimesters and the early puerperium. Laboratory and x-ray studies may be of little help in obtaining a diagnosis. In the opinion of Bryan, who recently discussed acute appendicitis in pregnancy, the history, if carefully taken, is the most important factor in arriving at the correct diagnosis.

Douglas advises early surgical interference in the pregnant woman, especially in the third trimester, even when the signs and symptoms are relatively benign. Even though a certain number of patients may be operated needlessly, he feels the risk is insignificant compared to the possible tragedy which so frequently follows "procrastination and subsequent rupture of this organ."

Bryan, who agrees with this advice, notes a

41.6 per cent of patients with normal appendices who received surgery. On the other hand, Krieg, who collected 200 cases from four Detroit hospitals, calls attention to a 2 per cent maternal mortality with a definitely higher correct preoperative diagnosis. In the latter, the results of delay in surgical interference are obvious.

There were three patients in the group at Children's Hospital in San Francisco with a ruptured appendix. All occurred in the third trimester. All mothers and babies survived, although premature labor in one mother began within a matter of hours following surgery.

Bowel obstruction: Even more serious but fortunately far less frequent among complications requiring surgical interference during pregnancy, is intestinal obstruction. It increases in frequency in the advanced stages of pregnancy and early puerperium. This may be the result of tension on bands and adhesions produced by the enlarging uterus. Other causes include those which result in bowel obstruction also in the non-pregnant woman, such as volvulus, hernia, tumors and occasionally intussesception.

The main problem is in diagnosis. Presence of the gravid uterus is a definite handicap and may frequently result in serious delay in recognizing this condition. Auscultation and palpation become increasingly difficult in the presence of an abdomen filled in part or completely by the gravid uterus. The usefulness of x-rays as an added diagnostic aid also may be minimized. This can result in a delay which may even be fatal, especially when small bowel is involved. Six such cases were reported from the Martha Hague Hospital in 1952.

As in the non-pregnant, the symptoms of obstruction are much more profuond when the blood supply is involved. The case of one such patient was reported from the Sanford Hospital group. Within 12 hours of delivery, this patient complained of generalized abdominal pain with vomiting and distention. Symptoms of rapidly increasing shock were also present. The patient expired within a period of 48 hours in spite of treatment. Autopsy showed an extensive mesenteric thrombosis resulting from volvulus of an unusually elongated mesentery with a very narrow base.

Treatment of this condition is directed primarily toward release of the obstruction. It should be noted that one is definitely handicapped in the use of decompression methods in the patient well advanced in pregnancy. Von Geldern, in reporting some seven cases of intestinal obstruction, found that termination of the pregnancy was sufficient in three patients near term to relieve the acute symptoms without surgery. However, in two patients in this present series, all symptoms became accentuated and more apparent following delivery of the fetus. One patient operated twice, once early and again late in pregnancy, required a third laparotomy for relief from the same complication following delivery.

There were no fatalities in the group of cases reported from Children's. This can only be explained by early interference following the onset of symptoms.

Ovarian tumors: Tumors involving the ovary, discovered during early pregnancy, should be removed if solid or cystic and more than 10 cms. in diameter. The large majority of the latter which are of a size too small to be of surgical importance, are simple follicular or corpus luteum cysts. Many of these are either lost in the abdomen by the enlarging uterus or regress during the ensuing pregnancy. However, it should not be forgotten that torsion of the adnexa may occasionally occur with these same small tumors or even with a normal tube and ovary.

In Bell's experience, well over 80 per cent of ovarian tumors treated surgically are found to be cystic. The remainder are of the solid variety. Of the former, the most common in his opinion are cysts of the dermoid or pseudomucinous type. In the past five years at Children's Hospital, there were two out of the five dermoids correctly diagnosed preoperatively by x-ray evidence of calcium deposits.

It had been previously assumed that surgery within the first trimester, especially if the ovary containing the corpus luteum was removed, would be followed by spontaneous termination of the pregnancy. Recent accumulation of evidence has proved this assumption to be wrong. Placental function evidently begins much earlier in pregnancy than was previously thought, as shown by the discovery of chorionic gonadotropins in the patient's blood, even before the first period is missed.

Discovery of an ovarian tumor late in pregnancy can be treated by immediate removal. However, for the most part cesarean section, with removal at term, is the method to be preferred in patients with advanced pregnancy, should the tumor create a dystocia. If delivery of the fetus from below can be negotiated, then removal of such a tumor in the puerperium is probably even more satisfactory.

Although almost any kind of an ovarian tumor may be found associated with pregnancy, malignant neoplasms are fortunately rare. One such tumor was included in this series. It was first discovered at some 28 weeks of gestation. Because of its rapid growth, radical surgery was advised with sacrifice of the uterus and fetus. The patient, however, survived only six months following surgery.

Uterine fibroids: It was only some three decades ago that fibroids, discovered in early pregnancy, were treated by immediate myomectomy. In spite of heavy sedation, a high percentage of the patients thus operated, promptly miscarried. There was one such patient who was treated in this manner at Children's in the past five years. Fortunately, she was carried to term with no further complications, and was allowed to deliver spontaneously.

Of the seven patients in this group which came to surgery, one required an emergency laparotomy at 36 weeks with a preoperative diagnosis of acute appendicitis. On opening the abdomen, a pedunculated fibroid of the anterior uterine wall was found. It was gangrenous and surrounded by a layer of fibrin. Five of the remaining six were treated by supravaginal hysterectomy at the time of cesarean section. A similar hysterectomy was performed upon the sixth patient in the immediate puerperium. A large submucous fibroid filling the entire vagina, thought at first to be an inversion of the uterus, was found at the time of delivery of the placenta.

For the most part, myomata associated with pregnancy are left undisturbed. Even at cesarean section, only those which are in or near the uterine incision are removed, unless the uterus itself is to be sacrificed. It has become an accepted fact that with the rapid growth of these tumors during pregnancy, they undergo a high degree of degeneration. As a result, a large percent of myomata return to a size definitely smaller than that found preceding the pregnancy.

Vascular accidents: Of the least common but nevertheless serious intra-abdominal complications of pregnancy, are the so-called vascular accidents. They are the result in part of the increase in pressure which affects the intra-abdominal vessels in these patients during the latter months of pregnancy and the immediate puerperium. Although any abdominal vessel may be involved, hemorrhages resulting from rupture of aneurisms of the splenic and renal arteries are two of the most serious. Both are associated with unusually high maternal and fetal mortality. In a recent discussion of this subject, Thorp collected 117 cases of splenic artery rupture in pregnant women since 1900. Of these, 93.6 per cent occurred in the third trimester. What is most significant is that only five of this group survived and of the five, only two were diagnosed preoperatively.

Sperling, although admitting the infrequent preoperative diagnosis of this complication, suggests three possible criteria which might be helpful. Of these, the first is the upper left quadrant pain; the second is the presence of a systolic bruit over the palpable tumor mass; and the third is a pulsating filling defect in the greater gastric curvature on fluoroscopy.

Although even more infrequent than rupture of the splenic artery, such an accident in one of the renal arteries can be equally, if not more, serious. Of 11 cases involving this condition, Thorp reports the survival of but three patients. Only two of the three babies survived.

Not one of the 11 was diagnosed previous to surgery or autopsy. However, this author suggests that abdominal distention with increasing shock and a palpable retroperitoneal mass, confined to one flank, may be helpful. All patients in his group complained of intense pain in this same area.

The treatment in both these complications is immediate surgery. The uterus may be opened and emptied if it is sufficiently large to interfere with adequate exposure.

DISCUSSION

It becomes highly important to discuss briefly two phases intimately connected with the diagnosis and treatment of the acute abdomen in pregnancy. The first of these has to do with the choice of anesthesia and, the second, with x-ray as a diagnostic aid.

In the early half of the gestational period, should an intra-abdominal surgical procedure be indicated, an induction dose of intravenous pentothal from 250-350 mgms. or more is used, depending on the size of the patient. The anesthesia may then be switched to small divided doses of intravenous demerol, 10 to 25 mgms., combined with nitrous oxide. Should the patient be in shock from blood loss, cyclopropane is the anesthesia of choice. As an alternative, however, following a small induction dose of 50-75 mgms. or more of pentothal, intravenous demerol in doses up to 200 mgms. or more combined with Iorfan has been found to be both safe and effective.

In the latter half of pregnancy, spinal pontocaine, up to 8 or more mgms., given in 3 or more cc. of glucose and spinal fluid is to be preferred. The patient may then be tipped into Trendelenburg position and oxygen administered. By this method, comparatively little in the way of pressure drop has been found. Here again, demerol and Iorfan may be helpful, should the procedure be unduly prolonged as by a preliminary section.

As a final word, there is no doubt that the opinion of a large majority of doctors is swinging away from the indiscriminate use of x-rays at any time during pregnancy. However, on discussing the problem of x-ray for diagnostic purposes in the pregnant patient with various doctors in that field, one is left with the feeling that maybe the crusade against its use has been too severe. All are unanimous in the opinion that its use during the first three months of pregnancy should be avoided entirely, with few or no exceptions. Conservative and judicious use any other time in pregnancy is permissible and probably inocuous.

UNITED STATES CENSUS PROBABLE GROWTH

Some figures released by the U.S. Bureau of Census relative to the probable growth of the 11 western states. Please note that the southwestern six states including Arizona are expected to grow 32.3% and the Pacific Northwest 21.9%, whereas the United States as a whole will grow 15.5% from 1960 to 1970.

State	1960	1970	Increase
Arizona	1,268,000	1,802,000	42%
California	15,273,000	20,296,000	33
Nevada	310,000	453,000	46
New Mexico	896,000	1,126,000	26
Utah	909,000	1,151,000	27
Colorado	1,762,000	2,197,000	25
SOUTHWEST TOTAL	20,418,000	27,025,000	32.3%
Oregon	1,923,000	2,433,000	27%
Washington	2,918,000	3,594,000	23
Idaho	664,000	771,000	16
Montana	671,000	755,000	13
Wyoming	338,000	392,000	16
NORTHWEST TOTAL	6,514,000	7,945,000	21.9%
11 Western States	26,932,000	34,970,000	30.2%

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. . . cleared
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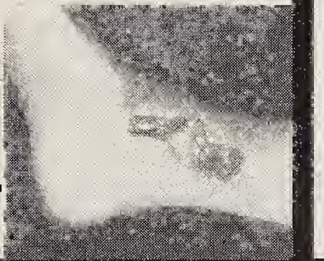
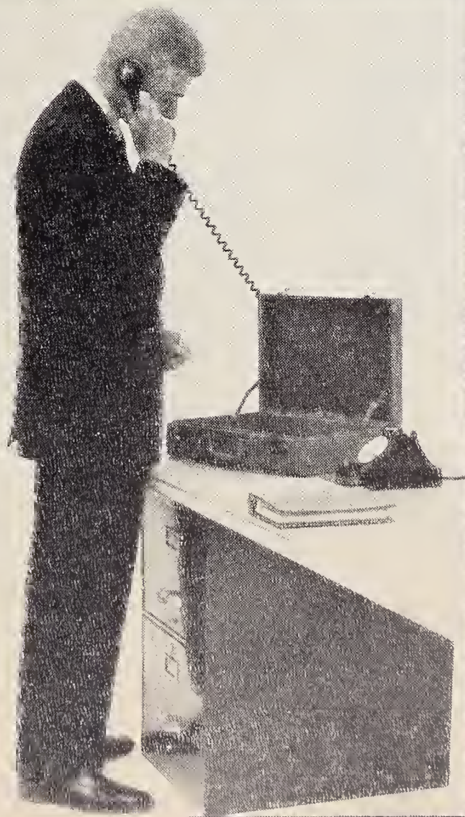


VARICOSE ULCER
15 years duration
. . . resolved with
VARIDASE[1]

INFLAMMATORY DERMATOSIS
rapidly spreading
rhus dermatitis
healed within
a week[1]

INFECTED LACERATION
arked reversal
in 3 days . . .
returned
to school . . .
sure advanced[1]



THROMBOPHLEBITIS
back on his feet
in a week after
recurrent episode[1]

REFRACTORY CELLULITIS
normal routine
resumed after 4 days
of VARIDASE[1]

Diagnosis and Treatment of Diseases of the Parathyroid Glands

PART III

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IDIOPATHIC HYPOPARATHYROIDISM

THE IDIOPATHIC variety of parathyroid hypofunction is indeed uncommon. Whether the scarcity of cases is due to the actual rarity of the disorder or to lack of recognition by the medical profession is open to question(58). As of 1952, there were less than 150 reported cases of idiopathic hypoparathyroidism(58, 59, 163). While the condition is apt to present a diagnostic riddle, once diagnosed, it is amenable to treatment(143). As the name would indicate, the etiology of this disease is unknown. Several cases of congenital idiopathic hypoparathyroidism have been reported(80). Dietrich's, et al. analysis of 113 cases revealed age extremes of from two to seventy-two years at time of diagnosis(58). According to Van Ommen, there is no significant difference in sex incidence but the onset of symptoms is somewhat earlier in the female(173). Dietrich et al. state that the disorder is approximately twice as frequent in females as in males. Symptoms usually appear in the first or second decade and roughly 25% of the cases appear before the age of five years. The average time between onset of symptoms and therapy is slightly less than ten years(163). Three cases have been reported in siblings(167). The clinical features of idiopathic hypoparathyroidism are much like those of postoperative parathyroid hypofunction; however, the tetany may be more latent and trophic changes are more severe because of the chronicity of the disease(58). Chronic tetany is the most common manifestation of the disease, occurring in three-fourths of cases(163). Tetanic equivalents or manifest tetany may occur during menstrual periods which would suggest a relationship between estrogenic substances and parathormone(58, 137). Recurrent generalized convulsions formed part of the symptom complex in 52% of the cases reported by Steinberg and Waldron(163) while Dietrich et al. report a smaller percentage of patients with seizures. "Tetanic Equivalents" such as paresthesias, numbness, muscle cramps, laryngeal spasm, and bronchial spasm are not infrequent. Papilledema occurs in more than 10% of cases and when associated with convulsions may lead to a mistaken diagnosis of brain tumor. Frank psychosis may be the presenting symptom(143). Cataracts were present in 50% of the cases reported by Steinberg and Waldron and were present in 40 of 113 cases in Dietrich's review. The predominant occurrence of idiopathic hypoparathyroidism in the first and second decades does not seem to protect against cataract. The youngest patient reported by Steinberg to have cataracts was only twelve years of age(163). In the past, it was believed that the cataracts were due to convulsions with ciliary spasm, but the present feeling is that cataracts are due to low serum calcium secondary to parathormone deficiency since cataracts occur in other conditions in which convulsions are absent yet serum calcium is low(58, 163). Symmetric calcification in the basal ganglia is a characteristic but not a constant finding in idiopathic hypoparathyroidism(58, 80, 163). There is characteristically a normal or increased bone density. However, a well documented case of idiopathic hypoparathyroidism has been presented with concomitant body demineralization and that author feels that skeletal demineralization will occur in cases of hypocalcemia of unusual severity(155). Dental defects occur in approximately one-third of cases(91, 173). The electrocardiogram characteristically shows a prolongation of the QT interval with flattening of the ST segment. Schulman and Ratner have reported a case of idiopathic hypoparathyroidism in which there was cardiac decompensation in the absence of demonstrable heart disease(155). The heart failure improved coincident with the rise in serum calcium. They feel that hypocalcemic heart disease is a definite clinical entity and ascribe it to an interference in cardiac neuromuscular transmission secondary to low values of serum calcium. Two cases have been reported of idiopathic hypoparathyroidism coexisting with pernicious anemia(96, 139). The association of fungus infections, mainly monilia, is fairly frequent(163,179). Although the coexistence of hypoparathyroidism and adrenal cortical insufficiency is rare, there have been several well documented cases(108, 131). It is felt that superficial moniliasis is the result of dystrophic lesions of the mucosa, skin, and nails, due to hypoparathyroidism, and that these lesions may precede chemical changes in the serum by a long interval(179). Examination of the urine and of the formed elements of the blood is uniformly negative. Constant findings are hypocalcemia and hyperphosphatemia, with levels of serum phosphorous as high as 13 mg.%. The alkaline phosphatase is characteristically normal. A low renal threshold for calcium is an occasional finding.

The following criteria should be satisfied for the diagnosis of the disease:

1. Low serum calcium level.
2. High serum inorganic phosphorous level. (Greater than 5 mg.% for adults and 7 mg.% for patients under 16 years.)
4. Normal bones on x-ray (to exclude infantile rickets or adult osteomalacia).
5. Chronic tetany.
6. Absence of a past history of thyroid surgery.
7. Absence of chronic intestinal dysfunction (steatorrhea).

The treatment of this disorder consists of therapy intended to increase serum calcium and reduce serum phosphorus. These will be discussed in the section on the treatment of hypoparathyroidism.

Only 5 of the 52 patients in Steinberg's and Waldron's series were dead at the time of the last follow-up. Thus, it would appear that, although the morbidity of hypoparathyroidism is great, death due to hormonal insufficiency is unusual. It is easily understandable then that few cases have come to autopsy. Of three cases examined at post mortem, two showed complete absence of parathyroid tissue while the third showed all the parathyroid glands to be replaced by fat(39, 59, 108).

PSEUDOHYPOPARATHYROIDISM (SEABRIGHT-BANTAM SYNDROME)

This condition is a familiar metabolic disease in which the parathyroids are seemingly normal in structure and function. However, the end organ response to parathormone is abnormal(56). The disease was first described by Albright in 1942(7). It is known as the "Seabright-Bantam Syndrome" because the male Seabright bantam has female feathering presumably due to failure of the feathers to respond to normal amounts of male hormone.

Pseudohypoparathyroidism presents a clinical picture of short stature, heavy set appearance, round face, mental retardation, and short stubby fingers. There is evidence of chronic parathyroid insufficiency as manifested by clinical and laboratory features. Tetany occurs in these patients in the absence of renal disease, steatorrhea, or osteomalacia. There is shortening of metacarpal and metatarsal bones. Soft tissue calcification involving the basal ganglia and subcutaneous tissues is frequent. Despite all this, the patients show little or no response to parathormone(61).

There have been five instances of familial incidence in approximately 35 cases culled from the world literature(175), and one of these involved both parent and child(156). Several cases have been reported with skeletal demineralization(132, 140).

This process must be differentiated from true hypoparathyroidism. Pseudohypoparathyroidism is more likely to have calcium deposits in skin and basal ganglia than true hypoparathyroidism. The best way to differentiate these two disorders is the performance of the Ellsworth-Howard Test. In this test the intravenous administration of 200 units of parathyroid extract causes a varied phosphate diuresis. Patients with pseudohypoparathyroidism may exhibit a twofold increase in urinary phosphate excretion, while normal subjects show a fivefold to sixfold increase and patients with idiopathic or postoperative hypoparathyroidism show a tenfold or greater increase in urinary phosphate excretion under the conditions of the Ellsworth-Howard Test(182). The Ellsworth-Howard Test is not infallible. The test may not be valid because of the possible dissociation of phosphaturic and calcium mobilizing effect of parathyroid extract. Also, there is a normal diurnal variation of phosphorus excretion(118).

Both calciferol (Vitamin D2) and dihydrotachysterol (AT10) have been used successfully in the treatment of pseudohypoparathyroidism(95, 166).

PSEUDO-PSEUDOHYPOPARATHYROIDISM

This disease is extremely rare. As of 1956 there were only four reported cases in the world literature(8, 121, 144, 175).

These patients have some, but not all, of the stigmata of pseudo-hypoparathyroidism. The term pseudo-pseudohypoparathyroidism has been given the condition in which hypocalcemia (and resultant tetany and convulsive symptoms) and hyperphosphatemia are absent but ectopic ossification, dyschondroplasia, short stature, and round facies are present. No calcification of the basal ganglia has been noted in this group.

TREATMENT OF HYPOPARATHYROIDISM

The treatment of hypoparathyroidism consists of almost indefinite substitution therapy aimed at maintaining serum calcium and phosphorus at normal levels. Adequate management demands close cooperation between patient and physician. Substitution therapy involves a rigid therapeutic program which may include dihydrotachysterol (AT10), Vitamin D. calcium, aluminum hydroxide gel (to bind phosphorus), probenecid (Benemid) (to promote excretion of phosphorus), hydrochloric acid (to aid absorption of calcium), thyroid substances, sedatives, and a diet low in phosphorus (63).

The use of parathormone would appear to be a simple all-inclusive method of substitution therapy for this disorder; however, it is not practical to use the hormone over long periods of time since antihormones and allergic reactions to the foreign protein soon render the present commercial preparations valueless. The physician, therefore, must use agents which will increase calcium absorption from the diet(29).

Acute hypocalcemia should be treated with intravenous calcium chloride or calcium gluconate. However, one should institute a therapeutic regimen on a long term basis at the onset of acute calcium deficit. Caution must be exercised in the use of intravenous calcium in hypoparathyroid patients on digitalis because of the danger of cardiac arrest(30).

The patient must attempt to follow his disease in much the same fashion as a patient with diabetes mellitus. After serum calcium and phosphorus have been brought to normal levels, the patient may take over the major responsibility of treatment and the Sulkowitch Test is convenient for this purpose. If an early morning urine shows zero precipitate, then calcium is low and medication should be increased. A one plus indicates good control. A three plus indicates overtreatment and dosages should be decreased (36).

The Sulkowitch Test, while it is the best method for home control, is not ideal. Cases have been reported with Sulkowitch urine precipitates within normal range of density at calcium levels below 7 mg.%. A negative Sulkowitch has been reported in a patient with normal serum calcium(71, 143, 182).

Because of the potential error with the Sulkowitch test, and because of human frailty, the patient should periodically return to his physician for checks on serum calcium and phosphorus (71). In this regard, it is of interest that the low serum calcium value may be absent and an elevation of serum phosphorus to between 5 and 6 mg.% may be the only positive laboratory finding(103).

The dietary management of hypoparathyroidism should be directed at giving the individual food in which the ratio of calcium to phosphorus is fairly high (2:1-4:1). It is very important to be aware that most foods which have high calcium contents are also rich in phosphorus. Therefore, if one attempts to increase calcium absorption by a diet weighted with calcium rich foods, the purpose is defeated since these foods are also rich in phosphorus, and a high calcium-phosphorus ratio in the diet is not attained (147). Foods with a high phosphorus to calcium ratio such as milk should be avoided(163). The intake of meat, fish, whole grain cereals, and dairy products should be limited because of their phosphorus content.

Calcium may be given in the form of calcium gluconate, calcium lactate, or calcium chloride. Calcium chloride may irritate the gastrointestinal tract if given in large amounts(147). Calcium lactate powder is a convenient preparation and may be given in a dose of four teaspoonsful a day dissolved in beverages other than milk. Each tsp. is equal to 3 gm. High calcium intake not only supplies calcium for absorption but also binds phosphorus as insoluble calcium phosphate which is passed in the stool. Therapy with calcium lactate powder costs less than one penny per day(36).

Dihydrotachysterol (AT10) is an effective therapeutic agent which has the disadvantage of being relatively expensive. The usual cost of therapy with this preparation is from $.55 to $2.20/day(36). AT10 is a derivative of irradiated ergosterol(149) and its effect is about midway between parathormone and Vitamin D2. Its major action is the augmented urinary excretion of phosphates, although a minor primary effect is to increase the absorption of calcium from the gut(163). It has more influence on the kidney than Vitamin D2 but it has less than parathyroid hormone. It has more effect on calcium absorption than parathormone but less than vitamin D2(36). It should be supplemented with oral calcium and low phosphorus diet in order to reduce the effective dosage(163). The possibility of dangerous hypercalcemia caused by this medication must be kept in mind(2). The usual dosage is 2 to 8 capsules/day. Two capsules are equal to 1 ml. liquid.

Calciferol (Vitamin D2) is a cheap and effective means of therapy. Its cost runs between three and twelve cents per day(36). This sterol also increases the urinary excretion of phosphorus and the intestinal absorption of calcium (147). It is supplied in 50,000 unit capsules and the usual dose is 1-4 capsules/day. It has been used successfully in the treatment of pseudohypoparathyroidism(95). Toxicity may occur from the use of Vitamin D2 probably due to high levels of ionized serum calcium. The symptoms are nausea and vomiting. If a patient shows poor control on Vitamin D2, the calcium intake should be increased because calcium will not cause toxicity as does D2. The dosage of D2 should be decreased at the same time.

Parathyroid implantation has been tried with only moderate success. Halsted and Pool, in 1907, first transplanted parathyroid tissue into a neighboring muscle(76, 134). Ogburn and Black feel that there is little critical evidence that such implants function; however, they believe that the procedure should be attempted in all cases in which parathyroid tissue is resected with the thyroid gland(128). More recently, Escamilla et al. have successfully transplanted cultured parathyroid tissue into several patients with surgical hypoparathyroidism. Their results were not spectacular yet apparent success in several of the patients followed for more than a year would indicate that this avenue of approach should be given further study(63).

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Synergism between Meperdine (Demerol) and Gila Monster Venom

Herbert L. Stahnke

Director, Poisonous Animals Research
Laboratory, Arizona State University
Tempe, Arizona

IT HAS been shown previously (Stahnke, 1956) that meperdine hydrochloride (Demerol *R*) (2) acts synergistically with the neurotoxic venom of the scorpion *Centruroides sculpturatus* Ewing. In the same paper it was postulated that since the venom of the Gila Monster, *Heloderma suspectum*, Cope, demonstrated neurotoxic properties meperidine may not be a desirable analgesic agent for such cases of venenation. This hypothesis was tested in the following manner:

Procedure: The same statistical design reported previously (Stahnke, 1956) was used. Rats were again the animals of choice. The LD50 was determined for lot 30.5E of *H. suspectum* venom taken by pipette from the *vestibulum oris* of live animals and lyophilized. The venom was reconstituted with distilled water to a concentration of 10 mg/ml. The LD50 of meperidine was determined previously (Stahnke, 1956). The effect of meperidine on the LD50 of the venom was then tested by the use of 50 mgm/kgm and 100 mgm/kgm as constants while the dosage level of the venom was varied. The same precautions were observed as reported previously (Stahnke, 1956).

Results: The data from all the tests are given below. The Da (first level dosage) is in mgm/kgm, as are also the LD50s and the Confidence Limits. In each case $N = 4$, $R = 2$, and $K = 3$.

Agents	Da	r-values	LD50	95% Confidence Limits
Venom only	2.80	0,0,3,4	9.50	6.7 to 13.4
Meperidine only	160.0	0,0,3,4	239.8	213.6 to 269.1
50 mg/kgm meperidine plus variable venom	2.80	0,2,4,4	5.65	4.0 to 7.99
100 mg/kgm meperidine plus variable venom	9.75	0,0,3,4	2.5	1.70 to 3.47

Discussion: The above data indicate that meperidine greatly increases the toxicity of *H. suspectum* venom; 50 mgm/kgm of meperdine causes a drop in the LD50 from 9.50 mgm/kgm to 5.65 mgm/kgm or causes the venom to be 1.68 times as toxic, while 100 mgm/kgm of meperidine changes the LD50 from 9.50 mgm/kgm to 2.5 mgm/kgm or 3.8 times as toxic. The synergistic action is even greater than demonstrated (Stahnke, 1956) for the venom of the scorpion *C. sculpturatus.*

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Conclusion: Since the reaction of rats to *H suspectum* venom closely parallels that of man, the above data strongly suggests the contra-indication of meperidine as a therapeutic agent in conjunction with this type of venenation. The above data adds to the evidence that meperidine should be used with caution in the presence of any neurotoxic venom. This would include the venom of not only certain scorpions and the Gila monster, but also that of the Black Widow spider and rattlesnakes.

---

(1)With the technical assistance of Frank A. Billingsley and Assistant Director A. E. Dammann.
(2)Demerol (R) hydrochloride received through the courtesy of Winthrop-Sterns, Inc.

Hypoxia of the Heart Muscle

An Experimental Study

Adolfo Flores Ortega, M.D.

Guadalajara, Jal.

HIPOXIA DEL MIOCARDIO

EN cierto número de casos de enfermedades cianóticas congénitas del corazón así como en casos de nacimiento de la coronaria izquierda a partir de la pulmonar, la inversión de las ondas T en algunas derivaciones se atribuye a la perfusión del sistema coronario con una sangre pobremente oxigenada.

Con el deseo de estudiar experimentalmente esta alteración de la onda T hemos estado trabajando con un procedimiento quirúrigico que nos permite desviar la sangre venosa dentro de la aurícula izquierda, creando de esta manera un estado hipóxico en la circulación sistémica y consecuentemente en la red coronaria. Este procedimiento quirúrgico fué introducido por el autor en el estudio de las curvas de disociación de oxígeno cuando en tal punto se trabajaba en la Universidad de Chicago.

Mediante esta operación se pueden tener perros con una saturación de oxígeno arterial hasta de 35%, de acuerdo al tamaño de la fístula. Los cambios electrocardiográficos que hemos observado mediante estas fístulas veno-arteriales son los siguientes: a los pocos minutos de estar funcionando el shunt al voltaje de los complejos se abate; la onda T positiva se vuelve isoeléctrica para luego negativizarse; estos fenómenos los hemos seguido estudiando en algunos animales hasta 30 días después de la intervención y hemos visto que persisten; en otros casos en que hemos deshecho la fístula estas alteraciones desaparecen, es decir, los voltajes aumentan y las ondas T se positivizan, en otras palabras el trazo electrocardiográfico se normaliza. (Estos datos se refieren a las derivaciones D2, D3, y VF).

Podemos concluir por este estudio que la inversión de la onda T en casos de anomalias cardiacas congénitas cianóticas así como en casos de nacimiento de la arteria coronaria izquierda a partir de la pulmonar se debe a la perfusón del sistema coronario con sangre poco oxigenada.

IN A CERTAIN number of cyanotic congenital heart anomalies as well as in cases of left coronary artery taking origin from the pulmonary artery, the inversion of the T waves in some leads is attributed to the perfusion of the coronary system with a blood poorly oxygenated.

With the idea of studying experimentally this alteration of the T wave we have been working with a surgical procedure which allows us to divert the venous blood into the left auricle, creating in this way a hypoxic state in the systemic circulation and consequently in the coronary system. This surgical procedure was introduced by the author while working at the University of Chicago in the study of the oxygen dissociation curves.

By means of this operation one can have dogs with an arterial oxygen saturation down to 35% according to the size of the shunt. The electrocardiographic changes that we have observed by means of this veno-arterial shunt are the following: after few minutes of the shunt being open the voltage of the curves comes down; the T wave is changed from positive to isoelectric to become later on frankly negative; we have followed these in some animals up to 30 days after the operation and we have noticed that they persist; in some other cases in which we have undone the shunt these alterations disappeared. In other words, the voltages increase and the T waves become positive, i.e. the electrocardiographic curves return to normality. (These data are referred to leads D2, O3, and VF).

We may conclude by this study that the alteration of the T wave in cases of cyanotic congenital anomalies of the heart as well as in cases of a pulmonic left coronary artery, is due to the performance of the coronary system with an under-saturated blood.

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Editorial

REGRESSION IN THE TREATMENT OF MAMMARY CARCINOMA*

Progress in surgery does not always move steadily forward. There are times when it suffers regression. An instance of this occurred in the treatment of appendicitis in the years before the discovery of sulfanilamide, when the death rate rose steadily to 36 per 1000. During the past decade we have witnessed a similar deterioration in the treatment of mammary carcinoma. One cause for this is that the care of patients with this disease has been taken over by unskilled operators. The stimulus for this shift of patients came from McWhirter's teaching, that a simple mastectomy plus irradiation gives results which are as good as those following a radical mastectomy. With the prestige of the Edinburg Infirmary behind this doctrine, and the substitution of an easy operation for a difficult one, it is not surprising that hundreds of doctors began to operate on their own patients instead of referring them to competent surgeons. Following their poorly executed operations the patients were usually referred for radiation therapy to a person inadequately trained.

What is even more distressing is that many competent surgeons, either out of pessimism over the results of their radical mastectomies or from misinterpretation of McWhirter's results, changed over to doing simple mastectomies. It is to surgeons in this group that this editorial is

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*Reprinted from THE AMERICAN SURGEON, Vol. 26, No. 1, Jan., 1960

ARIZONA MEDICINE

Journal of

The ARIZONA MEDICAL ASSOCIATION, Inc.
AND
MEDICAL SOCIETY OF THE
UNITED STATES AND MEXICO

VOL. 17 MAY, 1960 NO. 5

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CONTRIBUTIONS

The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules should be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English or Spanish, especially with regard to construction, diction, spelling and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
6. Exclusive Publication — Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unused manuscripts.
7. Reprints will be supplied to the author at printing cost.

(The opinions expressed in the original contributions do not necessarily express the opinion of the Editorial Board.)

primarily directed. Let us look into the basis for their pessimism, and then into some facts about McWhirter's publications. Poor results following radical mastectomies are due to two causes: (1) operating on patients in whom the tumor is incurable; (2) whittling down the real Halsted procedure, either from ignorance, hurry, or sheer laziness. Haagensen has statistics to show that when these obstacles are overcome one can secure a 75 per cent 5-year survival rate in patients with axillary metastases of limited extent. The late Dr. Barney Brooks went to Scotland to asecrtain the basis for the dissatisfaction with the surgical treatment of mammary carcinoma. He found that the operations which were labeled "radical mastectomies" disregarded most of Halsted's principles and were not truly radical.

There are many competent surgeons who have followed McWhirter's lead without examining his work critically. Ackerman visited the Edinburgh Clinic and pointed out the following: 13 of the 719 patients did not have carcinoma; 220 of the patients had a concomitant bilateral oophorectomy. All of the patients in whom the disease persisted after irradiation were treated by an axillary dissection or by hormones. McWhirter's claim that radiation therapy destroys the malignant cells in lymph nodes has not been demonstrated; in fact, examination of his own material disproved this claim. Ackerman concluded, "He has presented no objective evidence as to the necessity for simple mastectomy."

Even if McWhirter's thesis were correct, there are two practical problems which should deter most surgeons in the United States from following it: (1) there are insufficient well-trained radio-therapeutists; (2) there are many patients who cannot afford the time and the expense required for proper radiation therapy. It seems clear, then, that simple mastectomy plus irradiation should be reserved for the patients who are too feeble to undergo an extensive procedure and for those with incurable disease. The hard and deplorable fact is that many women with a mammary carcinoma which is curable by a Halsted mastectomy are denied their only chance of living by the substitution of a simple mastectomy and irradiation. This is indeed the reverse of progress.

WARFIELD M. FIROR, M.D.
1101 North Calvert St.
Baltimore 2, Maryland

THE ARIZONA VIEW

Standards for judging drinking by drivers vary widely throughout the United States. There is one which has been selected as a model by the A.M.A. and the National Safety Council. It is the definition of the Arizona Supreme Court:

"The expression 'under the influence of intoxicating liquor' covers not only all the well known and easily recognized conditions and degrees of intoxication but any abnormal mental and physical condition which is the result of indulging in any degree in intoxicating liquors, and which tends to deprive him of that clearness of intellect and control of himself which he would otherwise possess.

"If the ability of the driver of an automobile has been lessened in the slightest degree by the use of intoxicating liquors, then the driver is deemed to be under the influence of intoxicating liquor. The mere fact that the driver has taken a drink does not place him under the ban of the statute unless such drink has some influence upon him, lessening in some degree his ability to handle said automobile."

JAMA Feb. 27, 1960

LETTER TO THE EDITOR

"The Board of Directors of The Arizona Medical Association, Inc., has reviewed the article of Mr. J. N. McMeekin appearing in the December issue of Arizona Medicine Journal and investigated its charges. It was the unanimous opinion of this Board that these allegations are not substantiated by fact. The Board of Directors wishes to inform the readership of this Arizona Medicine Journal that it stands foursquare and unanimously behind all actions taken by the Editor-in-Chief and the Publishing Committee of this Association.

Lorel A. Stapley, M.D.
Secretary

LETTER TO THE EDITOR

United States Senate
Washington, D.C.

March 14, 1960
Dr. Leslie B. Smith
1130 East McDowell Road
Phoenix, Arizona

Dear Dr. Smith:

Thank you for your recent correspondence discussing with me the problems our country's senior citizens face in the area of medical care and services.

Not ignoring the difficult situation which confronts many older citizens who seek adequate medical care, there is an alternative to a dependence upon socialized medicine as proposed by H.R. 4700, the Forand Bill. I refer to the fact that today 40% of the people over age 65 are covered by some type of voluntary health insurance. More than 124 million Americans have one type or another of voluntary health insurance, and if the rate of increase in coverage of Old Age and Survivors beneficiaries that was recorded between 1951 and 1957 continues, about 70% of the people in this group will have availed themselves of health insurance by 1965.

Those who would link medical welfare benefits with those of OASDI paint a pretty picture but an incomplete one. Who is to pay the cost of such benefits which are sure to total a billion plus dollars a year? The Social Security Trust Fund cannot, if it is to retain its integrity; the only alternative, of course, is the federal government. No where in the Constitution of the United States is there given to the federal government the power to undertake the making of welfare payments to its citizens. Let me remind you also that should the government undertake such a program, an inevitable result will be further inflation, the inflation which today undermines your savings, your retirement incomes and social security benefits.

It is my great hope that as more and more of our people take advantage of voluntary health plans, as the medical profession, business and unions continue to cooperate in making such plans available, that here will be a sound solution to this problem, a solution in keeping with the traditions of our country and one which will not rob any American of his right to economic independence.

Sincerely,

BARRY GOLDWATER

LETTER TO THE EDITOR

United States Civil Service Commission
Bureau of Retirement and Insurance
Washington 25, D.C.

Memo to Editors:

For Your Information

The Bureau of Retirement and Insurance is receiving numerous queries from various sources asking whether the Civil Service Commission intends to request from Congress authority to delay the effective date of the Federal Employees Health Benefits Act of 1959. The law states that the effective date of the Health Benefits program is the first day of the first pay period which starts in July 1960.

In response to one such query, the Chairman of the Commission has stated flatly that "there will be no request for the deferment of the effective date so far as the Civil Service Commission is concerned."

ANDREW E. RUDDOCK,
Director

PAGET'S DISEASE

It has been estimated that roughly 3 to 4% of the population over the age of 40 years has Paget's disease. This makes Paget's disease among the most common of nonmetabolic bone diseases. From experience in 6 cases the anabolic steroid hormones, especially long-acting testosterone and estrogen preparations, are the treatment of choice in Paget's disease, as in postmenopausal osteoporosis. (Condensed from *California Medicine*, 91:245, 1959)

In Memoriam

JOHN L. DONAHUE, SR., M.D.

1886 - 1959

John L. Donahue, Sr., M.D.

Dr. John L. Donahue, Sr., who practiced medicine in Tucson for more than 20 years, died November 17, 1959. He was 73.

Born in Nesquehoning, Pa., he moved with his parents to Philadelphia, where he graduated from St. Joseph College, and from Jefferson Medical College in 1910.

Dr. Donahue, associated with St. Joseph's Hospital in Philadelphia, later specialized in mental diseases at State Hospital in Norristown, Pa. He served in World War I as a surgeon assigned from U. S. Army Medical Corps to the London General Hospital and Sixtieth Field Ambulance of the British Army, and was one of the first medical volunteers from this country.

After the war, Dr. Donahue did post-graduate work in eye, ear, nose and throat at the University of Pennsylvania, then continued in private practice in Philadelphia for several years.

Ill health caused him to go to New Mexico where he served with the U. S. Veterans Bureau Hospital at Fort Bayard, N. M. He was transferred to the Veterans Hospital in Tucson in 1929.

He went into private practice again in 1932, and in his later years specialized in psychiatry. He was a consultant to the Veterans Administration in psychiatry for many years and a member of the staffs of St. Mary's Hospital and Tucson Medical Center. He was a diplomate of the American Board of Psychiatry and Neurology and a member of several medical associations. He retired in 1953.

Surviving are his wife, Florence; two sons, Hugh L. of Los Angeles, and John L. Jr., of Tucson; a sister, Mary Donahue, of Philadelphia, and three grandchildren.

RESOLUTION
PIMA COUNTY MEDICAL SOCIETY

WHEREAS, the death of John L. Donahue, M.D., in his 74th year, brings to close recall his many years of devoted and valuable service as a physician in this community, and

WHEREAS, in particular the Pima County Medical Society recognizes the loss of a loyal senior member and an esteemed colleague, BE IT THEREFORE

RESOLVED: That the Pima County Medical Society inscribe in its permanent records its feelings of sorrow, and convey to Doctor Donahue's family an expression of deep sympathy in their bereavement.

JAMES HENRY ALLEN, M.D.

1887 - 1959

Dr. James H. Allen died in Phoenix, October 1, 1959, after a brief illness.

He was born at West Medway, Massachusetts, March 24, 1887. He graduated from Willaston Academy, Willaston, Massachusetts. In 1915 he graduated from the Georgetown University School of Medicine. After an interneship he was serving a residency at the Columbia Hospital in Washington when the United States entered World War I. He served duirng the war in the Army Medical Corps, and later was Chief Surgeon of the United States Public Health Service Hospital at Norfolk, Virginia.

James Henry Allen, M.D.

He came to Arizona in 1920, serving on the medical staff of the Veterans' Administration Hospital at Fort Whipple until 1926 when he opened his practice in Prescott. He soon developed an excellent practice and was highly regarded throughout Northern Arizona, and greatly beloved in Prescott.

For years he was actively interested in civic affairs. He served on the local school board from 1938 to 1947, and as physician to the Pioneers' Home from 1933 to 1947.

He was Assistant County Physician from 1942 to 1946 and County Physician from 1947 to 1956. During this period he devoted most of his time and energy toward improving the County Hospital. A new $300,000 building was completed, the staff and personnel were reorganized, and the Hospital, for the first time, met the requirements of the State Board of Health. Having studied the problems of hospital care in smaller communities, he recognized the importance of expanding the facilities at the Yavapai County Hospital and the fallacy of trying to provide duplicate facilities in a community such as Prescott. Because of his outspoken manner and his impatience at the slow rate of hospital improvement he not infrequently incurred the displeasure and criticism of his associates.

Dr. Allen was a member of the Yavapai County Medical Society, the Arizona Medical Association, the American Medical Association and the American College of Surgeons. In spite of his many outside interests, he was an extraordinarily keen practitioner. Each year, for many years, he made it a practice to spend at least two weeks in post-graduate studies.

Jim Allen will long be remembered for his modest, unassuming manner and for his kind and sympathetic treatment of his patients.

His widow, Mrs. Mary Allen, resides at 878 Evergreen Road, Prescott, Arizona.

GUY PETER SLAUGHTER, M.D.

1912 - 1959

Dr. Guy Peter Slaughter died July 13, 1959.

Dr. Slaughter was born in Burke, South Dakota, January 7, 1912. He received the degree of Doctor of Medicine from the University of Nebraska Medical College, June 7, 1937; was licensed to practice Medicine in Arkansas, Nebraska Medical College, June 7, 1937; was li- in the Medical Corps, Army of the United States, being honorably discharged July 20, 1945; practiced in Nebraska before coming to Arizona in 1958; practiced in Show Low, Springerville, and Winslow; and was a member of the Navajo County Medical Society, the Arizona Medical Association, and the American Medical Association.

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LINDSAY E. BEATON, M.D.

President
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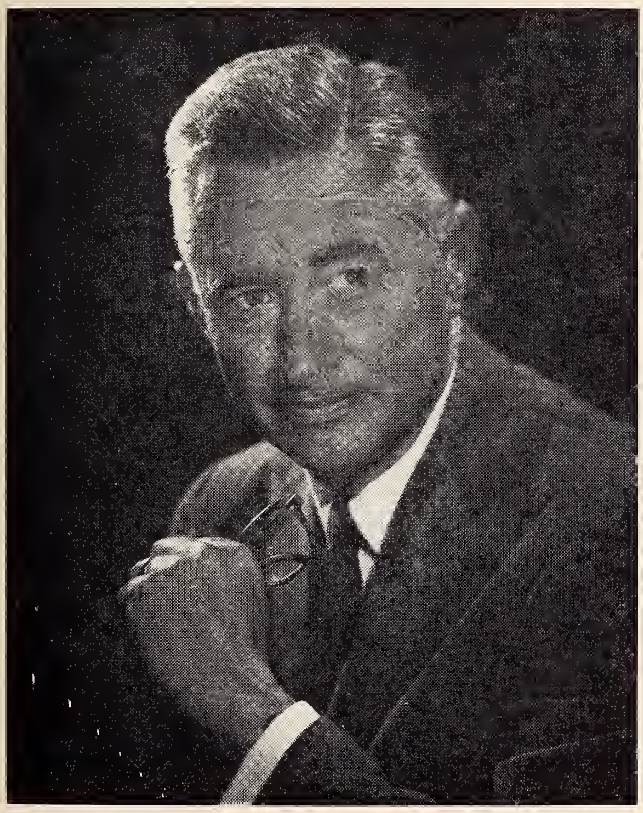


Lindsay E. Beaton, M.D.

Dr. Lindsay E. Beaton of Tucson is a specialist in psychiatry and neurology. He was born in Chicago, Illinois on January 25, 1911. He moved to Tucson in 1946 and has been engaged in private practice since then.

Dr. Beaton attended the secondary schools of Evanston, Illinois and in 1928 entered Dartmouth College, receiving his A.B. degree in 1932. He graduated from Northwestern Medical School, receiving his M.D. degree in 1939. He also holds an M.S. degree from that university's Institute of Neurology. His interneship was served at Passavant Memorial Hospital in Chicago and his residency at Northwestern University Medical School, Institute of Neurology. He is certified in both specialties by the American Board of Neurology and Psychiatry.

The record of Dr. Beaton's professional career includes the facts that he was Medical Fellow, National Research Council, 1939-1941, and thereafter served in the U. S. Army Medical Corps (Captain to Lt. Colonel, 1941-1946) in the South and Central Pacific theatres. He holds three combat stars. Currently Dr. Beaton is consultant to the Veterans Administration Hospital in Tucson and to the U. S. Army Hospital, Fort Huachuca, Arizona. He was formerly an instructor in Anatomy and Neurology at Northwestern Medical School, and at present is a lecturer for the Department of Psychology, University of Arizona.

Dr. Beaton is a member of Phi Beta Kappa, Alpha Omega Alpha and Sigma Xi; the Academy of Neurology (Fellow), American Psychiatric Association (Fellow), American Medical Association, American Academy of Forensic Sciences (Fellow), Pima County Medical Society and The Arizona Medical Association, Inc.

Public offices held by Dr. Beaton and also civic committees on which he has served are: Member State Hospital Board, 1952; President, Tucson Child Guidance Clinic, 1958-1959; President, Family Service Agency, 1956-1957; and Chairman, Social Planning & Priorities Committee. He is at present an active member of the Tucson Community Council.

Dr. Beaton is the author of an imposing list of thirty-eight articles published in scientific journals. He was Associate Editor, *U. S. Army Medical History of World War II* for the volume on "Neuropsychiatry in the War Against Japan." The hobbies and special activities of Dr. Beaton are tennis, music and oriental art.

Dr. Lindsay E. Beaton is the son of David Beaton, Jr., insurance broker, of Chicago, and of Vera de Lipkau Beaton (deceased). He has one sister, Mrs. Lorna Beaton Williams (George O. Williams) also of Chicago.

Dr. Beaton is married to the former Mildred O. Chapman, their children being Kathleen Fraser Beaton, born February 24, 1947, and Jeremy de Lipkau Beaton, born June 30, 1948.

BOARD OF DIRECTORS

Meeting of the Board of Directors of The Arizona Medical Association, Inc., held February, 1960, Leslie B. Smith, M.D. (Vice-President), chairman, presiding.

MEMBERSHIP CLASSIFICATION CHANGES

Pima County Medical Society

It was moved by Doctor Hileman, seconded by Doctor Beaton and unanimously carried that the Board approve Associate membership, dues exempt, account retirement, for both John E. Mulsow, M.D., effective January 12, 1960, and Charles W. Rudolph, M.D., effective December 31, 1959.

It was reported that the Board of Directors of Pima County recommended and that the Society elected George O. Hartman, M.D. and Charles N. Sarlin, M.D. to Honorary membership. It is requested that the Association, through its House of Delegates, in annual meeting this year give similar favorable consideration thereto. Clarification of procedure was sought. Question was raised as to whether "Honorary" membership is appropriate for the purpose intended; i.e. to provide continuing membership for former active members of this Association who are now in practice in another State.

It was moved by Doctor Steen and seconded by Doctor Moody that this matter be referred to the Articles of Incorporation and By-Laws Committee to formulate a fourth category under (C) Associate Members (Chapter II Membership, Section 3, Classes of Membership) in order that there may be included licensed physicians outside the State of Arizona as Associate members.

It was moved by Doctor Beaton, seconded by Doctor Edel and unanimously carried that the aforementioned motion be amended to the effect that the question be referred to the Articles of Incorporation and By-Laws Committee for their consideration; and that this (suggestion) is one possibly but not binding their hands to this as the only thing that they can do.

Question was then called on the original motion, as amended, which was unanimously carried.

Further discussion ensued and from information presented it was believed that Doctor Hartman would be eligible for Associate membership as it is understood he is in "retirement" and not engaged in active practice.

It was moved by Doctor Beaton, seconded by Doctor Hileman and unanimously carried that the Board would approve Associate membership, dues exempt, account retirement, for George O. Hartman, M.D. if he is found to be eligible when his situation is checked and he is recommended therefor.

Yuma County Medical Society

It was moved by Doctor O'Neil, seconded by Doctor Hileman and unanimously carried that the Active membership in this Association of Jerome E. Andes, M.D. be restored, it having been determined to the satisfaction of this Board (and the Yuma County Medical Society) that at least half of his "active private practice" is in Arizona (the remainder in Needles, California).

Pima County Medical Society

MENTALLY AND MOTOR RETARDED CHILDREN

The Board of Directors of the Pima County Medical Society in meeting held January 7, 1960 received, reviewed and approved a report of its Advisory Committee for mentally and motor retarded children which recommended that additional facilities, from a State level, of a Children's Colony type be strongly urged, either as an expansion of the present facilities or the location of an additional and similar facility in the neighborhood of Tucson. While over a period of two years the clinic program of the Diagnostic and Planning Group, designated by the Society, has functioned well, insofar as services and facilities are available, in the handling of the mentally and motor retarded children, it is the feeling that there is a very definite lack of and need for institutional facilities such as are found in the Children's Colony.

Doctor Hamer stated that he felt quite certain the State Welfare Department would be most interested in this project and their support might be anticipated. He suggesting contact.

It was moved by Doctor Beaton, seconded by Doctor Edel and unanimously carried that this matter of expanding the Children's Colony or providing equal facilities be referred to the the Legislative Committee for study and report.

BENEVOLENT AND LOAN FUND COMMITTEE

Doctor Yount reported that there are five applications which have been proposed, developed to the point of getting insurance to secure the money for the Association totalling $6,400.00. Question has been raised as to whether all the aplications should be submitted for legal review to make sure all the things are in there before the checks are written. None of the students have received payment as yet. We are now attempting to obtain life insurance.

Considerable discussion ensued referable to the propriety and legality of requiring a life insurance policy in a sum in excess of the actual amount of the loan; whether the Association or the borrower should acquire it; whether some type of policy could be obtained similar to that used by small loan companies wherein the coverage is for the exact amount of the loan; whether such insurance requirement should be abolished; the mechanics of follow-up should the borrower be required to obtain the insurance as regards premium payments, stipulation of beneficiary and any subsequent change, all of which would require the full cooperation of the insurance carrier; and in the event the Association acquires the insurance and pays the premium, which is proposed, is such premium cost to be added and made a part of the total loan, and is it a proper debt chargeable and collectible from the borrower? Counsel spoke to the question and again expressed concern in the matter of insurance, especially as regards the requirement of procurement of a policy in excess of the actual amount of the loan.

It was directed that the matter of insurance be referred back to the (Benevolent and Loan Fund) committee with Mr. Jacobson's comments and with the request that the chairman report thereon to this Board at its next meeting.

GRIEVANCE COMMITTEE

Case No. 82

The Grievance Committee reported upon the results of its deliberation and recommendation of reprimand in the matter of case No. 82.

It was moved by Doctor Young, seconded by Doctor Beaton and unanimously carried that this Board very definitely accepts the recommendation of its Grievance Committee and does reprimand the defendant in this case with the very sincere admonition by this Board to the defendant to be certain to guard against any recurrence of a problem of such serious nature as is here concerned.

Case No. 85

The Grievance Committee reported upon the results of its deliberation and recommendations in the matter of case No. 85.

It was moved by Doctor Neubauer, seconded by Doctor O'Neil and unanimously carried that the Board adopts each and all of the recommendations of the Grievance Committee as its own; that it direct the defendant to immediately comply in every detail; and that the defendant accept this action of the Board of Directors as a reprimand by it for the reasons outlined.

Case No. 87

Doctor Manning, chairman of the Grievance Committee, reviewed in detail this case. It was scheduled for hearing and the defendant's attorney requested postponement.

It was moved by Doctor Edel, seconded by Doctor Polson and unanimously carried that this matter be referred to the Grievance Committee for investigation in all facets.

Investigations

Doctor Manning reviewed in detail the problems confronting the Grievance Committee in lack of authority to carry out investigations concerning matters dealing with members of the Association without specific written complaint before it. Case No. 87 is one in point and was discussed at length; another involving the practice of a member which has been the concern of many over a period of several years. The desirability of a possible amendment to the By-Laws to authorize this Committee to undertake investigations of members whenever indicated was evaluated. Division of authority and levels of jurisdiction weighed heavily in the discussion. Reference was made to the disciplinary statute in effect in the State of Washington and current survey being made by AMA in an attempt to analyze the effectiveness of such laws presently in operation.

It was moved by Doctor Jarrett, seconded by Doctor Melick and unanimously carried that the Board of Medical Examiners of the State of Arizona be requested to carry out what investigations they feel indicated in the instance of the specific individual in question.

It was moved by Doctor Melick, seconded by Doctor Beaton and unanimously carried that the Board of Directors request of Mr. Jacobson an investigation of the State of Washington Disciplinary Committee and report back to the Board of Directors as to whether or not this might be something we could permit (adopt).

LEGISLATIVE COMMITTEE

Fluoroscopic Shoe Fitting

The Arizona Chiropody Association advised it had reaffirmed its stand opposing fluoroscopic shoe fitting and sought the cooperation of this Association in securing necessary legislation prohibiting it. The Legislative Committee in meeting held January 10, 1960 recommended to this Board that the Association also approve the elemination of the use of fluoroscopic shoe fitting equipment in stores, suggesting that the Arizona Chiropody Association take the initiative.

It was moved by Doctor Hileman, seconded by Doctor Edel and unanmiously carried that we reiterate our previous stand.

Ambulances — Emergency Medical Care

In the matter of "transportation of the injured" and in line with California statutes requiring either the operator of an ambulance in emergency service or an attendant on duty therein to possess a "first aid certificate" issued by the United States Bureau of Mines, the Legislative Committee recommends to this Board that a memorial be given to Doctor MacDonald Wood for presentation to the Arizona Corporation Cmmission to the effect that an increase in ambulance service fees on a competitive basis with other States be considered; and that Doctor Wood take this problem to the Maricopa County Medical Society's Legislative Committee for further action. It further recommends to this Board acceptance of the California Act (Section 21714 of the Vehicle Code) referable to operation of ambulances in emergency service, requiring first aid certification of operator or attendant on duty therein; and that following any necessary modification thereof to coordinate it with any existing Arizona statutes, that steps be taken to introduce the measure.

Doctor Jarrett reviewed his understanding of the intent of this action, including the matter restraining speed and use of sirens and observation of the usual speed regulations in whatever zone they are driving in.

It was moved by Doctor Jarrett, seconded by Doctor Edel and unanimously carried that we accept the recommendation of the Legislative Committee (in the matter of the first aid training requirement) including adherence to legal speed and driving regulations, with the exception of the portion that has to do with petitioning the Corporation Commission for a fee increase.

Commissioner of Public Health — Salary and Qualifications

A detailed report was submitted setting forth activities dealing with the Arizona State Department of Health and its Board and recommending to the Board of Directors approval of the proposed amendment to Section 36-135 A.R.S., providing for the establishment of a more realistic salary ($12,500.00 to $17,500.00) for the position of Commissioner of Public Health (a doctor of medicine) and prescribing adequate qualifications for the position.

The Legislative Committee further recommended approval of three additional measures to be introduced by the State Board of Health including (1) an appropriation of $25,958.00 to complete the purchase and installation of necessary equipment, etc. to refurbish quarters of the State laboratory in the Tucson State office building; (2) amending Section 36-132 B. (A.R.S.), introduced as H.B. 100 in 1959, providing authority to enter into contracts with the United States or any department or agency thereof, or with the State or any political subdivision or agency thereof, or with any private organization or agency thereof, for the purpose of providing additional professional or public health services to the State, to accept and expend funds for satisfactory services in accordance with terms of contract, said funds to be maintained separately and shall not become part of the State general fund; and (3) amend Section 36-105 (A.R.S.) intended to provide for the more expeditious handling of procedures dealing with abatement of public nuisances and submit such recommendations to the Board of Directors for its further consideration.

It was moved by Doctor Jarrett, seconded by Doctor Edel and unanimously carried that we accept the Legislative and Public Health Committees' report.

Received and noted was a resolution passed February 1, 1960 by the Maricopa County Medical Society urging members of the Arizona State Legislature to adopt legislation to increase the salary of the State Commissioner of Health and further provide for the establishment of proper qualifications for this position. Acknowledgement of receipt of this communication and advising action taken by this Board was directed.

AMA "Uniform Hazardous Substances Act"

The AMA again submitted a model bill approved by its Board of Trustees in October of 1956, known as the "Uniform Hazardous Substances Act," drafted by that Association's Committee on Toxicology after eighteen months of study, designed to require warning labels and the identification of hazardous ingredients in household, commercial and industrial chemical products. A federal version thereof (H.R. 7352 – 86th Congress) was introduced in the United States House of Representatives in May of 1959. It urged stimulation of activity and interest in this State's Legislature.

It was moved by Doctor Edel, seconded by Doctor Moody and unanimously carried that we take no further action on this until precedence has been established by other States in the Union.

Chiropody – Disability Insurance – Legislation

A Legislative bill proposed for introduction into the 24th State Legislature by the Arizona Chiropody Association relating to disability insurance: "Providing that the policy may permit insured to select the services of any licensee under Title 32, Chapter 7, to perform the services and provide for payment of the charge for services without requiring that insured first pay such expenses," was forwarded by that organization for review by this Association and hoped for support. It was referred to counsel and his opinion was presented and read.

It was moved by Doctor Edel, seconded by Doctor Young and unanimously carried that we not favor the proposed bill.

Arizona State Hospital – Land Sale

It was reported that Representative Nelson D. Brayton, M.D. (Gila) expressed concern over the proposed sale of a portion of land at the Arizona State Hospital to accommodate the proposed future site of a unit of the Brigham Young University, primarily because he feels this might be a potential site if, as and when consideration is given to the establishment of a medical school in Arizona. He seeks interest and support of The Arizona Medical Association in his position.

Further, Doctor Brayton seeks the support of this Association in H.B. 62, introduced by him January 18, 1960, an Act relating to public health and safety; providing for the establishment of a Cancer Advisory Committee.

It was moved by Doctor Edel, seconded by Doctor Steen and unanimously carried that until action has been taken upon it (subject to further study by our legal counsel and action of our Legislative Committee) we table it until the next meeting.

It was moved by Doctor Edel, seconded by Doctor Beaton and unanimously carried that we table it (matter dealing with sale of Arizona State Hospital land).

State Legislative Memorial – Social Security

The Chairman presented for information and discussion H.M. 6, introduced February 1, 1960 into the 24th State Legislature by members Kartus, Austin and Grimes of Maricopa, the memorial requesting the Congress of the United States to extend the application of benefits of Old Age and Survivors Insurance and Unemployment Compensation to all citizens of the nation.

It was moved by Doctor Edel, seconded by Doctor Polson and unanimously carried that a resolution be adopted relative to this, to be brought before the House of Delegates of our Association for discussion by the House of Delegates.

It was moved by Doctor Stapley, seconded by Doctor Edel and unanimously carried that if they are requested to give an opinion on this particular matter, that we state we have referred this to our House of Delegates and that we have not gone on record as favoring it or opposing it at the present time.

MEDICAL ECONOMICS COMMITTEE

Fee and Contractual Medicine Subcommittee

The Arizona Chapter of the American College of Surgeons reported that in annual meeting November 20, 1959, that body adopted a motion:

That it is medically ethical that the county societies may accept the principle of the relative value fee schedule for industrial and commercial groups, the unit value to be separately negotiated for each group.

Further, because of extending discussion about the principle of the relative value fee schedule it was felt that more consideration should be given to it prior to a State Association decision; therefore, it adopted the following motion:

The Arizona Medical Association, Inc. be requested to investigate the relative value fee schedule and present it to the House of Delegates.

It was pointed out that at the request of the Professional Committee the matter of fee schedule was referred to the subcommittee on Fee and Contractual Medicine for investigation and report.

It was moved by Doctor Yount, seconded by Doctor Edel and unanimously carried that we take no further action at this time, awaiting the report of the Fee and Contractual Medicine subcommittee.

Medicare Subcommittee

Following review by counsel as to extension of the Medicare contract for one year, resulting in his recommendation that certain clarifications previously made by letter by the Contracting Officer be again similarly stipulated in the instance of this renewal contract; review by the staff and Fiscal Administrator as to operational procedures, the latter recommending approval, the following supplemental agreements were presented for execution authorization:

1. Contract Extension (Renewal) Modification No. 47 3-1-60 — 2-8-61 Supplemental Agreement

II. Supplemental Agreement — Annex I — Appendix A Deletion and Substitution of Pages 22-22a-22b Regulations — above Contract Extension

III. Supplemental Agreement — Annex I Deletion Paragraph 5, Page 38, Medicare Manual and Schedule of Allowances and Substitution of New Paragraph and Paragraph 5a — Multiple Surgical Procedures.

IV. Supplemental Agreement — Annex I — Appendix IX A, Articles 1 and 3.

It was moved by Doctor Jarrett, seconded by Doctor Edel and unanimously carried that the (stipulated) officers of the Association be authorized to sign the supplemental agreements (presented) including the extension of the Medicare Program, for one year.

PROFESSIONAL COMMITTEE

Serological Tests — Marital Statutory Repeal

The Professional Committee, in meeting held January 10, 1960, received a report from its subcommittee on Venereal Diseases on the subject of pre-marital examinations and value of the blood specimen serological test provided by statute enacted in 1957 (Title 25, Marital and Domestic Relations, Chapter 1 Section 25-103-01 through 103-10 A.R.S.).

The purpose of this statutory regulation is considered twofold: (1) one of "delay" (waiting period) in the issuance of a marriage license; and (2) examination, including a standard serological test as may be necessary for the discovery of syphilis. To dispose of (1) above, no one is in disagreement with "delay." Possibly the waiting period should be extended; however, if this be the major intent of the legislature there is unanimous agreement that it should not be coupled with a medical problem or examination of questionable value, as prescribed.

Progress over the years in the treatment of syphilis (relatively simple today) was reviewed, as were State-wide experiences available; concluding that as best as can be determined from all available statistics, the Marital Law, since its enactment, has had no noticeable effect upon any decline of syphilis in Arizona. If the State wants "delay" in marriage licensing, have it, but let's not use this test as the basis. The emotional and moral factor should not be confused from the medical standpoint. The economical load does not justify the test. It is not an aid or alternative, in instances of lues, for having it done. Steps should be taken to repeal that portion of the existing law requiring the serological test. It is not of significant value in control of infectious cases of syphilis. It can and does add moral and emotional upsets in the instance of a false positive reaction.

The following resolution was unanimously adopted by the Professional Committee:

"WHEREAS, experience has shown the serological test to be of little value in case-finding of syphilis; and

"WHEREAS, morally we are in favor of a law requiring a 'waiting period' before the issuance of a marriage license in this State, but not on the basis of a pre-marital blood test, now, therefore, be it

"RESOLVED, that steps be taken to repeal that portion of the statute now in effect requiring 'examination, including a standard serological test, as may be necessary for the discovery of syphilis,' for the reasons: (1) it is a significant added expense; (2) it does rarely reveal infectious syphilis; and (3) it may and does cause serious emotional problems in the instance of a false positive reaction."

It was moved by Doctor Jarrett, seconded by

Doctor Young and unanimously carried that:

WHEREAS, it is now medically accepted that the serologic test for syphilis is of little use in case-finding of the disease and rarely reveals an infectious stage of the disease; and

WHEREAS, the mandatory performance of the test prior to marriage is therefore an unwarranted expense for couples about to be married; and

WHEREAS, serious emotional problems are caused by false positive reactions which occur in approximately fifty per cent of positive reactions; now, therefore, be it

RESOLVED, that The Arizona Medical Association, Inc., acting to spare the citizens of Arizona from a requirement that, in the light of recent experience, does not protect individual or public health, recommends repeal of that portion of the statute requiring a standard serological test.

PROFESSIONAL LIAISON COMMITTEE

Arizona AMEF Subcommittee — Report

Harold W. Kohl, M.D., Chairman of the subcommittee on Arizona AMEF of the Professional Liaison Committee recommends a suitable citation for presentation to the Arizona Pharmaceutical Association for their adoption and support of the "Arizona Plan," possibly a framed parchment reading: "In recognition of its outstanding contribution of the free system of medical education in these United States by its generous support of the Arizona Plan, presented in deep appreciation by The Arizona Medical Association, Inc."

It was moved by Doctor Neubauer, seconded by Doctor Beaton and unanimously carried that Doctor Kohl prepare such a citation for presentation at some time during their next annual meeting, suggesting the use of the plaque we have had under discussion, which will serve for this purpose also.

Doctor Kohl by letter expressed his views, opposing any thought of transferring AMEF contributions to the Benevolent and Loan Fund of this Association, feeling that each has its specific purpose.

Public Health Subcommittee

Donald E. Nelson, M.D., Safford, by letter dated January 8, 1960, expressed his views as to what should be the aims and proposed future programs of the State Health Department, supporting the basic six adopted by the AMA House of Delegates in 1950; i.e. (1) vital statistics; (2) Public Health education; (3) environmental sanitation; (4) Public Health laboratories; (5) communicable disease control; and (6) maternal and infant hygiene in cases in which private facilities are unavailable, those excluding the socialistic motivated diabetic, blood pressure, etc. testing programs. This matter has been referred to the subcommittee on Public Health.

Allied Professions Subcommittee

The Arizona Chiropodist Association seeks approval of this Association of a movie film developed by that group through Wyeth emphasizing with picture and discussion the role of the chiropodist in the clinic and hospital, for display before county societies, which suggestion is recommended by this committee.

It was moved by Doctor Steen, seconded by Doctor Manning and unanimously carried that the report of the Professional Liaison Committee (in this regard) be not accepted.

Arizona AMEF Subcommittee

The following recommendations were presented:

1. The Woman's Auxiliary of The Arizona Medical Association, Inc. be informed by a letter, to be read at its annual business meeting in 1960, of the gratitude we express and of the support we pledge to them in their continued efforts.

2. That the dues increase of $10.00 per active member per annum earmarked for aid to medical education through AMEF be held inviolable until such time as it may seem practicable to increase that amount.

3. That all doctors in our State contemplate well the financial needs of our medical schools as well as the constant attempts at each Session of Congress to introduce bills to subsidize educational institutions, including medical schools; and that each individual one of us ask ourselves, "Have I done my part in helping to preserve medical education in the United States free of government control and dictation?"

It was moved by Doctor Steen, seconded by Doctor Edel and unanimously carried that we accept the first two recommendations of this committee.

Governmental Medical Staffs Subcommittee

Associate with the current activities of the N.O.D. in the vicinity of Flagstaff, specifically at Bellemont, in hospitalization and medical treatment of civilian civil service employees and their dependents by military personnel and facilities, it is recommended to the Board that a memorial be prepared and forwarded to the appropriate designated authorities, protesting the current practice of using military personnel and facilities to hospitalize and medically treat civilian civil service employees of the Navajo Ordnance Depot.

It was moved by Doctor Hileman, seconded by Doctor Young and unanimously carried that we accept (this portion of) the report.

Nurses Subcommittee

It is recommended that the Board of Directors correspond officially with the Arizona State Nurses Association, the Arizona Federation of Licensed Practical Nurses, and the Arizona League for Nursing, informing them to meet with the subcommittee on Nursing for the purpose of discussing problems of mutual interest.

It was moved by Doctor Steen, seconded by Doctor Young and unanimously carried that this (portion of) report be accepted.

Woman's Auxiliary Subcommittee

In the matter of extending the Student Nurses Loan Fund program of the Woman's Auxiliary to include students in paramedical facilities, and suggestion following survey undertaken and completed by a special committee of the Auxiliary, which concluded "that at this time we might also consider the fitness of including the collegiate nursing course definitely, and possibly the medical technology course if finances permit," it was the considered opinion of the members of the subcommittee on Woman's Auxiliary that they ought not to, which has been accepted by the Professional Liaison Committee and constitutes its recommendation to the Board of Directors. Inclusion of students undertaking a two-year nursing school course at the Arizona State University affiliated with the Maricopa County General Hospital, Phoenix, with the support of the Maricopa County Medical Society, it was determined that they should not at this time, which is also the recommendation of the Professional Liaison Committee to the Board of Directors.

It was moved by Doctor Young, seconded by Doctor Steen and unanimously carried that (this portion of) the report be accepted.

Schools Subcommittee

It was recommended that this Association be officially actively represented in the State Advisory Committee on School Health and that Noel G. Smith, M.D., Chairman of the subcommittee on Schools of the Professional Liaison Committee be designated such representative.

It was moved by Doctor Young, seconded by Doctor Steen and unanimously carried that this recommendation be accepted.

In the matter of "School Health Services," it was recommended that such services in all cases should be designed to protect pupil health, to promote the maximum emotional, mental and physical health of the child, in order that he may most effectively function during the school day, and based on accepted standard, adaptability of plan to community operation, and influenced by local custom, professional personnel and other services available, said services being outlined in detail.

It was moved by Doctor Young, seconded by Doctor Steen and unanimously carried that we adopt this report and that a letter be forwarded to this subcommittee expressing our appreciation and thanks for the amount of work entailed in this very thorough documentation.

This report was considered newsworthy; accordingly, it was further directed that it be turned over to the Chairman of the Public Relations Committee for such attention.

PUBLISHING COMMITTEE

Arizona Medicine

DOCTOR NEUBAUER: "I do not know if you want to go into this. You saw our very good publicity in the December issue (of Arizona Medicine) which appeared the third week of January. I wrote up a report in answer to that. I think it is lengthly. I have already submitted it to Dermont (Doctor Melick) and Lindsay (Doctor Beaton). It is late in the day. I will be very happy to read it to you; I have spent some time on it but the point is: they know the content; Paul (Mr. Boykin) and Bob (Mr. Carpenter) have heard it; I have answered all the charges; I feel they are unfounded; they do not deserve an answer from me and he has had as much answer as he is going to receive as far as I am concerned. There is no question in my mind we made the right move in disassociating ourselves from Mr. McMeekin. Whether we can prove to you that this is the right move to publish it ourselves, only time can tell. My suggestion to you would be that if all these libelous, unfounded statements were made, possibly the simplest thing to do would be to take this report of mine and have a subcommittee review it and pass judgment on his statements and my statements and issue a statement in accordance therewith."

It was moved by Doctor Beaton, seconded by Doctor Young (and several others) and unanimously carried that the Board of Directors has investigated this and found no substantiation to any of Mr. McMeekin's allegations, and wishes to inform the readership of this Journal that it stands foursquare and unanimously behind all actions taken by the Editor-in-Chief and the Publishing Committee.

AMA Clinical Session — Dallas

It was reported that this Association's participation in the "Southwestern Hospitality Room" during the AMA Clinical Session in Dallas amounted to $511.57, an appropriation of $600.00 having been previously authorized.

COMMUNICATIONS

National Foundation — Health Scholarship Program

It was moved by Doctor Edel, seconded by Doctor Running and unanimously carried that C. Selby Mills, M.D. (Phoenix), Laddie L. Stolfa, M.D. (Phoenix) and Richard O. Flynn, M.D. (Tempe), who were proposed by the President, be endorsed as this Association's nominees from which one will be selected to serve on this State's Selection Committee associate with The National Foundation's Health Scholarship Program, who will participate in the selection of recipients of the scholarships.

OTHER BUSINESS

Public Relations Committee

Donald A. Polson, M.D., Chairman of the Public Relations Committee, reported in the matter of the Arizona Press Club (annual) Awards for outstanding journalistic endeavor. This Association has participated in the past when it was possible to designate categories dealing with (a) "Best Story of Medical Interest," and (b) "Best Allied Story in Medicine." Last year it was $300.00. This year such opportunity was not afforded and the categories listed appear to have no specific relationship to medicine or science; accordingly, the Committee membership was polled and its was voted not to contribute this year. The Press Club was informed of this Association's continued interest in promoting good medical reporting and advised it stands ready to offer cash for such awards if they are in such category.

Action approved.

MEETING ADJOURNED AT 5:15 P.M.

LOREL A. STAPLEY, M.D.
Secretary

HOW WIDESPREAD IS MENTAL ILLNESS?

1. About 1 in every 10 persons (17 million) has some form of mental or emotional disorder requiring treatment.

1. Each year about 1,220,000 persons are given psychiatric care in mental hospitals or in psychiatric wards of general hospitals.

3. About 750,000 patients are under mental hospital care on any one day of the year.

4. On any day of the year there are as many patients under treatment in mental hospitals as in *all* other hospitals combined.

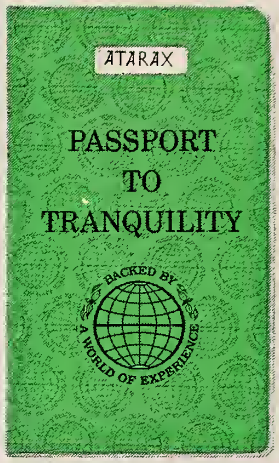
5. About 500,000 persons will be admitted during the year for psychiatric treatment to a mental hospital or to a psychiatric service of a general hospital. Of these, at least 100,000 will be re-admissions.

6. An additional 380,000 adults and children are seen each year in psychiatric clinics.

7. Psychiatric complications are important factors in 50% to 70% of the medical cases treated by physicians. At least 50% of the physical ailments treated in general hospitals have psychiatric complications.

A GUIDE TO

THE REALMS OF THERAPY BEST ATTAINED WITH



ATARAX®
(brand of hydroxyzine)

World-wide record of effectiveness—over 200 laboratory and clinical papers from 14 countries.
Widest latitude of safety and flexibility—no serious adverse clinical reaction ever documented.
Chemically distinct among tranquilizers—not a phenothiazine or a meprobamate.
Added frontiers of usefulness—antihistaminic; mildly antiarrhythmic; does not stimulate gastric secretion.

Special Advantages	Supportive Clinical Observation	...and for additional evidence
IN CHILDREN unusually safe; tasty syrup, 10 mg. tablet	"...Atarax appeared to reduce anxiety and restlessness, improve sleep patterns and make the child more amenable to the development of new patterns of behavior...." Freedman, A. M.: Pediat. Clin. North America **5**:573 (Aug.) 1958.	Bayart, J.: Acta paediat. belg. **10**:164, 1956. Ayd, F. J., Jr.: California Med. **87**:75 (Aug.) 1957. Nathan, L. A., and Andelman, M. B.: Illinois M. J. **112**:171 (Oct.) 1957.
IN ELDERLY PATIENTS well tolerated by debilitated patients	"...seems to be the agent of choice in patients suffering from removal disorientation, confusion, conversion hysteria and other psychoneurotic conditions occurring in old age." Smigel, J. O., et al.: J. Am. Geriatrics Soc. **7**:61 (Jan.) 1959.	Settel, E.: Am. Pract. & Digest Treat. **8**:1584 (Oct.) 1957. Negri, F.: Minerva med. **48**:607 (Feb. 21) 1957. Shalowitz, M.: Geriatrics **11**:312 (July) 1956.
IN ALLERGIC PATIENTS useful adjunctive therapy for asthma and dermatosis; particularly effective in urticaria	"All [asthmatic] patients reported greater calmness and were able to rest and sleep better...and led a more normal life.... In chronic and acute urticaria, however, hydroxyzine was effective as the sole medicament." Santos, I. M., and Unger, L.: Presented at 14th Annual Congress, American College of Allergists, Atlantic City, New Jersey, April 23-25, 1958.	Eisenberg, B. C.: J.A.M.A. **169**:14 (Jan. 3) 1959. Coirault, R., et al.: Presse méd. **64**:2239 (Dec. 26) 1956. Robinson, H. M., Jr., et al.: South. M. J. **50**:1282 (Oct.) 1957.
IN HYPEREMOTIVE ADULTS does not impair mental acuity	"...especially well-suited for ambulatory neurotics who must work, drive a car, or operate machinery." Ayd, F. J., Jr.: New York J. Med. **57**:1742 (May 15) 1957.	Garber, R. C., Jr.: J. Florida M. A. **45**:549 (Nov.) 1958. Menger, H. C.: New York J. Med. **58**:1684 (May 15) 1958. Farah, L.: Internat. Rec. Med. **169**:379 (June) 1956.

SUPPLIED: Tablets, 10 mg., 25 mg., 100 mg.; bottles of 100. Syrup (10 mg. per tsp.), pint bottles. Parenteral Solution: 25 mg./cc. in 10 cc. multiple-dose vials; 50 mg./cc. in 2 cc. ampules.

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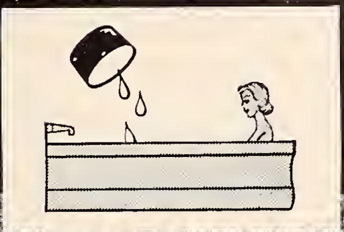
proven successful[1] in
almost every
case of
skin
itch
and
dryness



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1 rehydrate the dry, itchy, scaly skin

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Patients will appreciate pleasant, convenient, easy to use, pine-scented SARDO. Non-sensitizing. Most economical. Bottles of 4, 8 and 16 oz.

[1] Spoor, H. J.: N. Y. State J. Med. Oct. 15, 1958

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for atopic dermatitis
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In the treatment of depression Tofrānil has established the remarkable record of producing remission or improvement in approximately 80 per cent of cases.[1-7]

Tofrānil is well tolerated in usage—is adaptable to either office or hospital practice—is administrable by either oral or intramuscular routes.

Tofrānil
a potent thymoleptic . . .
not a MAO inhibitor.

Does act effectively in *all* types of depression regardless of severity or chronicity.

Does not inhibit monoamine oxidase in brain or liver; produce CNS stimulation; or potentiate other drugs such as barbiturates and alcohol.

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References: 1. Ayd, F. J., Jr.: Bull. School Med., Univ. Maryland *44*:29, 1959. 2. Azima, H., and Vispo, R. H.: A.M.A. Arch. Neurol. & Psychiat. *81*:658, 1959. 3. Lehmann, H. E.; Cahn, C. H., and de Verteuil, R. L.: Canad. Psychiat. A. J. *3*:155, 1958. 4. Mann, A. M. and MacPherson, A. S.: Canad. Psychiat. A. J. *4*:38, 1959. 5. Sloane, R. B.; Habib, A., and Batt, U. E.: Canad. M.A.J. *80*:540, 1959. 6. Straker, M.: Canad. M.A.J. *80*:546, 1959. 7. Strauss, H.: New York J. Med. *59*:2906, 1959.

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Geigy

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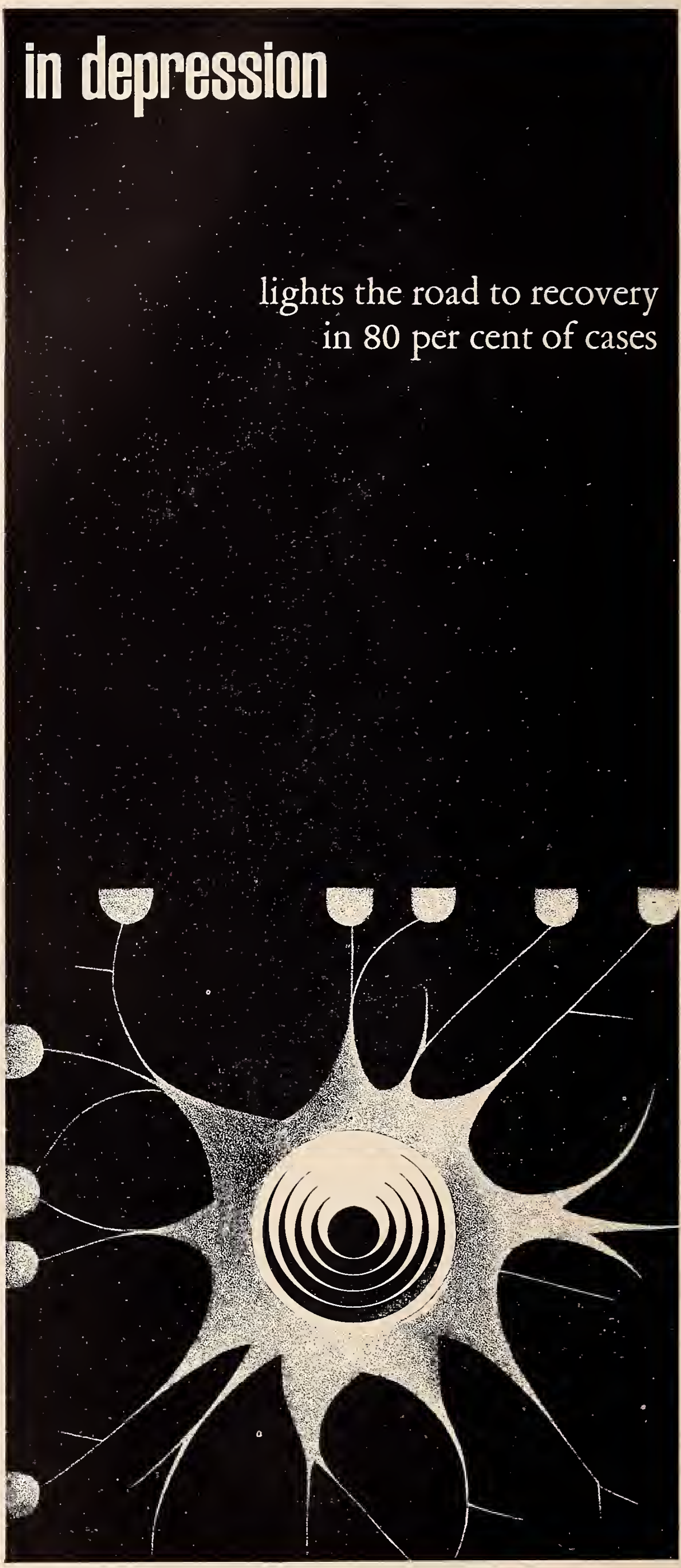
in depression
lights the road to recovery
in 80 per cent of cases

Clinical reports on
LOW BACK PAIN
show that
Trancopal®
a true "tranquilaxant,"
keeps the patient
on the job

A TRUE "TRANQUILAXANT"

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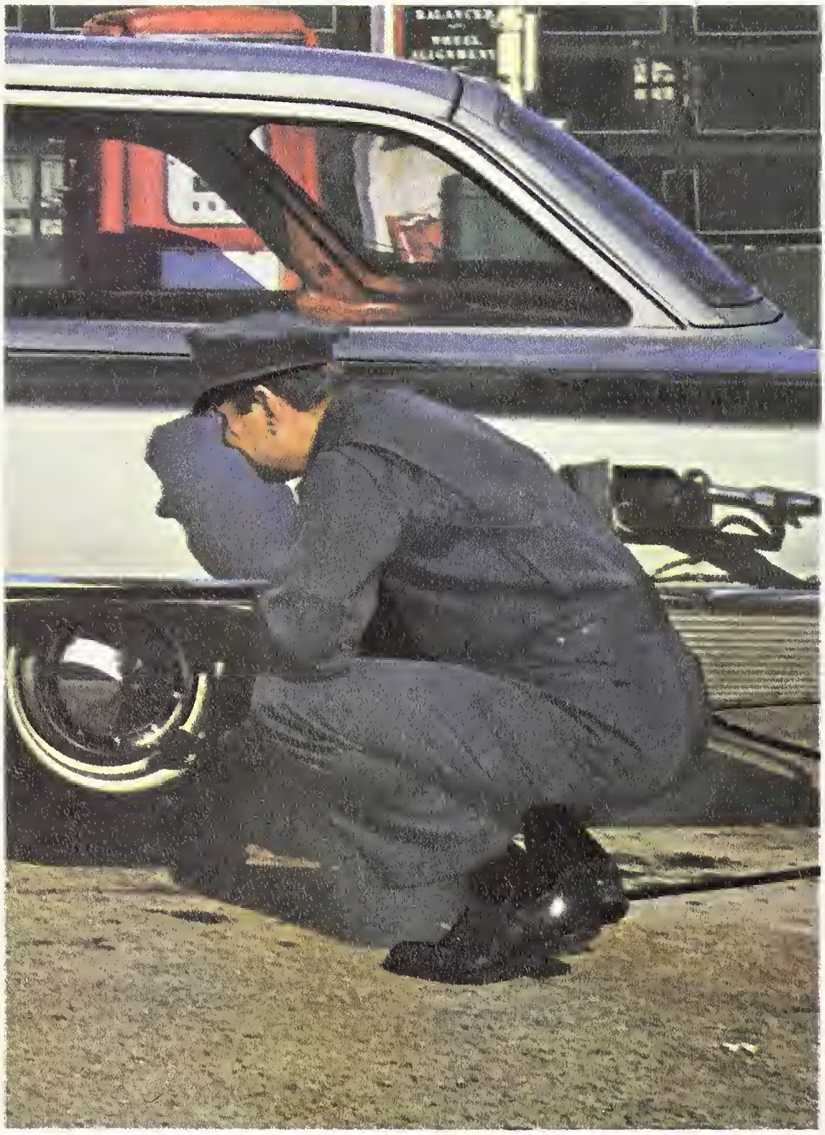

relaxes skeletal muscle spasm so the patient can continue to work

Clinical experience shows that Trancopal will enable your patients with low back pain to keep going strong. Lichtman[1] reports that 310 of his 331 patients treated with Trancopal obtained satisfactory relief. These patients were suffering from low back pain, stiff neck, postoperative muscle spasm or other skeletal muscle spasms associated with trauma, bursitis, osteoarthritis and rheumatoid arthritis. Mullin and Epifano[2] reported that Trancopal brought relief to all of 39 patients with skeletal muscle spasm. In these patients, who had suffered from trauma, bursitis, rheumatoid arthritis, osteoarthritis, and intervertebral disc syndrome, the effect of Trancopal was "... excellent and prompt ..."[2] Gruenberg[3] obtained marked relief with Trancopal in 258 of 304 patients with low back pain, torticollis, arthritis and other conditions associated with skeletal muscle spasm. Moderate relief was obtained in an additional group of 28 patients. Trancopal is a true "tranquilaxant" because "It combines the properties of tranquilization and skeletal muscle relaxation with no concomitant change in normal consciousness."[4] Side effects have been few and minor — and in no case were they serious enough to warrant discontinuing the use of Trancopal.[1] "Trancopal is exceptionally safe for clinical use."[3]

elieves anxiety and tension so the patient can carry on

Trancopal is also an effective agent for patients in anxiety and tension states. According to recent clinical reports,[1,5] it calms the patients but allows them to continue their work or other activity. Indeed, Lichtman found that his patients with anxiety "... were in many instances able to continue their normal activities where previously they had been considerably restricted ..."[1] He observed that Trancopal brought good to excellent relief to 114 of 120 patients in anxiety states. Ganz,[5] who noted good to excellent relief in 32 of 35 patients with globus hystericus, and in his entire series of 100 patients in anxiety or tension states, comments: "Chlormethazanone [Trancopal], by relieving the psychogenic symptoms, allows the patient to use his energies in a more productive manner in overcoming his basic problems."[5]

Relieves dysmenorrhea — Trancopal has also proved to be a useful medication in the treatment of patients with dysmenorrhea,[1,4,6] probably producing its effect "... by means of a combination of muscle relaxant and tranquilizing actions."[4]

Indications

Musculoskeletal disorders		Psychogenic disorders
Low back pain (lumbago)	Ankle sprain, tennis elbow	Dysmenorrhea
Neck pain (torticollis)	Osteoarthritis	Premenstrual tension
Bursitis	Rheumatoid arthritis	Anxiety and tension states
Fibrositis	Disc syndrome	Asthma
Myositis	Postoperative muscle spasm	Angina pectoris
		Alcoholism

Dosage: Adults, 100 or 200 mg. orally three or four times daily. Relief of symptoms generally occurs promptly and lasts from four to six hours.

How Supplied: Trancopal Caplets® 100 mg. (peach colored, scored) and 200 mg. (green colored, scored), bottles of 100.

eferences: 1. Lichtman, A. L.: Kentucky Acad. Gen. Pract. J. 4:28, Oct., 1958. 2. Mullin, W. G., and Epifano, Leonard: Am. Pract. & Digest Treat. :1743, Oct., 1959. 3. Gruenberg, Friedrich: Current Therap. Res. 2:1, Jan., 1960. 4. Shanaphy, J. F.: Current Therap. Res. 1:59, Oct., 1959. Ganz, S. E.: J. Indiana M. A. 52:1134, July, 1959. 6. Stough, A. R.: J. Oklahoma M. A. 52:575, Sept., 1959.

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clinical reports on anxiety show that

A TRUE "TRANQUILAXANT"

Trancopal

quiets the psyche but leaves the patient alert

"...TRANCOPAL is a most valuable drug for relieving tension, apprehension and various psychogenic states."[5]

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BIOGRAPHICAL RECORDS

ARIZONA MEDICINE desires the following biographical material on all of the members of The Arizona Medical Association.

Many of you have filled out these questionnaires in the past. However, with the change of publication of the Journal, many of the biographies were lost, and obviously many pictures are outdated.

We would request that you please fill out the following form, tear out on the perforation and return it to the editor's office, along with a picture if possible.

Thank you for your cooperation.

ARIZONA MEDICINE
720 North Country Club Road
Tucson, Arizona

"ARIZONA MEDICINE" BIOGRAPHICAL FILE

Date..............................

Name in full ....M.D.
(first) (middle) (last)

Professional mailing address ....
(street) (city) (state)

Residence ....
(street) (city) (state)

Place of birth ....Date of birth ....Sex............

When did you move to Arizona?...

In general practice ☐ Chosen Specialty..
(name)

In private practice ☐ Retired ☐ Not in private practice ☐
(seeing patients)

If not in private practice, indicate major activity:.......................................

....

Schools attended. Mention places, years and degrees, if any: ....

....

....

....

Medical School and date of M.D. degree: ....

Internship: ....

....

Residence: ....

....

....

Specialty Board certification: ....

Teaching Appointments: ....

....

Your professional career. Please include dates and places. ....

....

....

....

Medical, church, club or fraternal affiliations. Include dates of offices held. ....

....

....

....

Public offices held and important civic, political, charitable or other committees on which you have served. Please include dates. ....

....

....

Please list any scientific or artistic accomplishments such as inventions, discoveries, writings, musical compositions, paintings, research, etc. ....

....

....

If ever in military service, give dates, branch of service, unit, decorations, etc. ....

....

Interest hobbies or special activities: ....

....

Names of parents and their address: (Please give names even if deceased)

Father ....

Mother ....

Father's vocation ....

Brothers and sisters and their addresses: (Please furnish sisters' given names and their husbands' names) ....

....

....

....

Your marriage, to whom, when and where: ....

....

Your children, their birth dates and addresses: ....

....

....

Signature ..............................M.D.

....

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Medical Society of the United States and Mexico

CUARTA REUNION ANUAL

RESUME

La Sociedad Médica de los EE.UU y México celebró su última reunión en Scottsdale, Arizona del 2 al 4 de diciembre próximo-pasado, y en Las Vegas, Nevada durante los días subsiguientes.

Resultó la convención extremadamente interesante, y asistieron socios representando sinco estados mexicanos, y quince estados norteamericanos.

Las sesiones científicas y las actividades sociales fueron admirablemente organizadas por las comisiones dirigidas por los doctores A. H. Tallakson y Carlos V. Greth, de Phoenix. Participaron como miembros activos de estas comisiones los doctores Clifford Ernst, Juan Fonseca, Wesley Forster, V. E. Frazier, Charles Kalil, Walter Lee, Joseph Lentz, Augusto Ortiz, Philip Rice y Lucy Vernetti.

Los aspectos científicos de la reunión quedaron cubiertos en forma brillante; en particular sobresaltaron las ponencias del Dr. Ignacio Chávez, de Guadalajara, y la del Dr. Maxwell Lockie, de Buffalo, N. Y.

La manera en que se presentaron los trabajos demostró que no es en realidad necesario que se hagan traducciones bilingües, ya que los socios presentes, de ambos países, estaban lo suficientemente familiarizados con el otro idioma para comprender el contenido esencial de los artículos leídos, sin mayor dificultad.

En la sesión de Las Vegas la Presidencia cambió de manos: del Presidente saliente Dr. Héctor Gonzalez Guevara, de Mazatlán, Sinaloa, al Presidente entrante, Dr. W. R. Manning, de Tucson, Arizona.

Como nueva Juanta Directiva fueron elegidos: Dr. Ignacio Chávez, Presidente Electo, México; Dr. Juan Fonseca, Vice-President, EE.UU.; Dr. Eduardo González Murguía, Tesorero para México; Dr. R. E. Hastings, Tesorero para los EE.UU.; Dr. Miguel Carreras, Secretario para los EE.UU. y el Dr. E. Contreras Reyna, Secretario para México.

La próxima reunión tendrá efecto en Guadalajara del 8 al 10 de noviembre de 1960, continuándose el 11 y 12 en Mazatlán. Aquellos de Uds. que tuvieron la opportunidad de asistir a la reunión que se llevó a cabo en Guadalajara hace dos años, o a la de Mazatlán hace cuatro años, recordarán que fueron éstas, las reuniones más interesantes y estusiantas que haya tenido esta Sociedad. Esperamos y anticipamos que la asistencia a esta próxima convención bata el record de asistencia en ambos Guadalajara y Mazatlan. Aquellos que se interesen en presentar alguna contribución científica, deben comunicárselo al Secretario.

FOURTH ANNUAL MEETING RESUME

The Medical Society of the United States and Mexico met from December 2nd to 4th in

Scottsdale, Arizona, and the following two days in Las Vegas, Nevada.

It was a most interesting meeting and was represented by members from five states of the United States of Mexico and fifteen states of the United States of America.

The scientific meeting and the social activities were admirably planned by the committee headed by Dr. A. H. Tallakson and Dr. Carlos V. Greth of Phoenix. Their committee members were, Drs. Clifford Ernst, Juan Fonseca, Wesley Forster, V. E. Frazier, Charles Kalil, Walter Lee, Joseph Lentz, Augusto Ortiz, Philip Rice, and Lucy Vernetti.

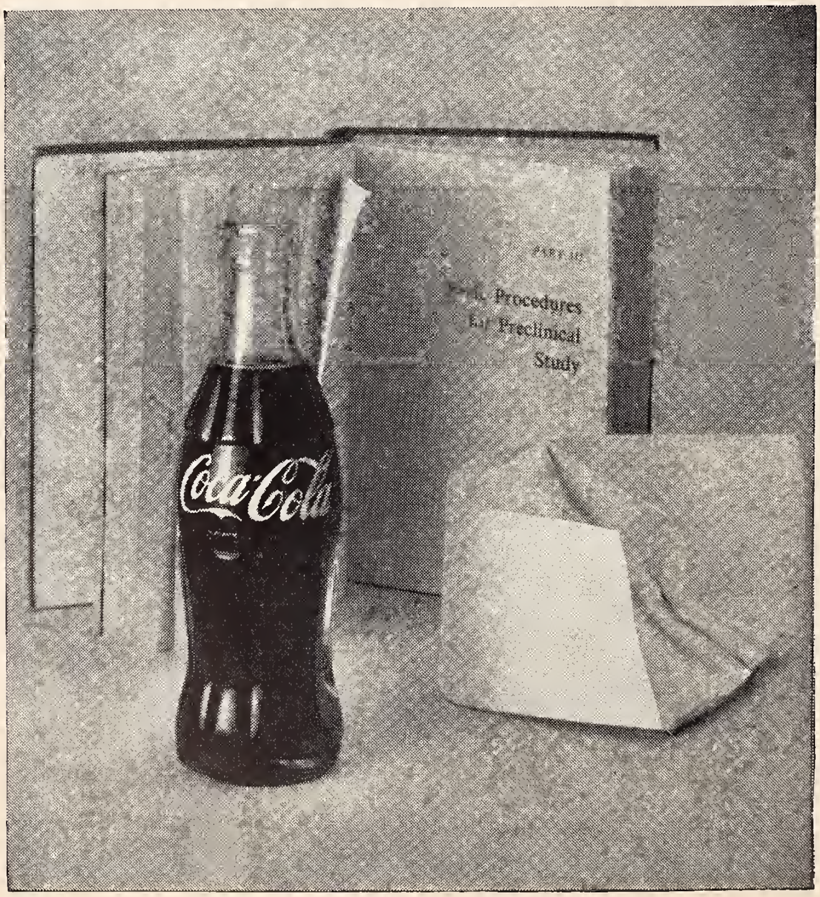
The scientific aspects of the meeting were extremely good, and highlighted were the papers by Dr. Ignacio Chavez of Guadalajara and Dr. L. Maxwell Lockie of Buffalo, New York, plus other excellent presentations.

These papers demonstrated the fact that bilingual translation is not a necessity since both the Mexican and United States members were sufficiently biligual to follow these scientific papers without difficulty.

At the meeting in Las Vegas the gavel changed hands from the retiring President, Dr. Hector Gonzalez Guevara of Mazatlan, Sinaloa, Mexico, into the hands of Dr. W. R. Manning, Tucson, Arizona, U.S.A.

Eelected as new officers were, Dr. Ignacio Chavez, President-Elect, Mexico; Dr. Juan Fonseca Vice-President, U.S.A.; Dr. Eduardo Gonzalez Murguia, Mexican Treasurer; Dr. R. E. Hastings, American Treasurer; Dr. Michael Carreras, American Secretary; and Dr. E. Contreras Reyna, Mexican Secretary.

The next meeting will be held in Guadalajara on November 8th, 9th and 10th, 1960, then moving to Mazatlan on November 11th and 12th. Those of you who were at the meeting held in Guadalajara two years ago and Mazatlan four years ago, will remember the most active and interesting meetings that this Society has ever enjoyed. I hope that everyone will make their plans to be there, both at Guadalajara and at Mazatlan. Those of you wishing to give papers should forward your requests to the Secretary of this Society.



When too many tasks
seem to crowd
the unyielding hours,
a welcome
"pause that refreshes"
with ice-cold Coca-Cola
often puts things
into manageable order.

DRINK
Coca-Cola
REG. U.S. PAT. OFF.

Topics of Current Medical Interest

DAILY POLLEN COUNT NOW AVAILABLE IN SALT RIVER VALLEY

Representing a first service of its kind in Central Arizona, a daily pollen count is now available and being distributed to physicians through a joint program of the Greater Arizona Chapter, Allergy Foundation, S-K Allergy Research Laboratories, Inc., of Phoenix, and David L. Walkington, M. S., botanist, of Arizona State University, according to Dr. Chas. W. Vivian, chapter president.

Mailed thrice weekly, recordings include pollen grains and fungous spores generally found in the Salt River Valley at different times of the year, the chart includes a daily weather report.

Statistics are compiled by Walkington from slides exposed on the roof of the University's Life Science Building and give a 24 hour average.

To acquaint the medical profession with the service, and as a contribution to the chapter, Stehpen C. Shadegg, of S-K Allergy Research Laboratories is mailing the count free to hundreds of physicians in the Valley for a few months period.

Anyone else desiring the count, Dr. Vivian stated, should contact the Allergy Chapter office, located in the Farm & Home Life Building, 2225 N. 16th Street, Phoenix, Tel. AL 8-7951.

Physicians not needing the count are requested to notify the chapter office or S-K Research Laboratories as the cost of gathering and distributing statistics is heavy, Dr. Vivian informed.

The Allergy Foundation of America is dedicated to research in the field of asthma, hay fever, and other allergic diseases, to promote better understanding of the problem to the public, to expand community services, and to provide the medical profession with helpful information.

To carry out these objectives the Greater Arizona Chapter was formed last year and represents the second chapter chartered in the nation by the Allergy Foundation of America.

AIR POLLUTION IN ARIZONA

II. THE METEOROLOGICAL ASPECTS

By Robert D. Smith, Jr., M.A.
Science Instructor, Scottsdale High School

Based on common observation and experience it is generally known that there is a close relationship between weather and air pollution and that the amount of contaminants discharged into the air may be rather constant. The degree of air pollution over an area will vary greatly.

There are three variables that govern the behavior of contaminants at their source. They are wind direction, speed, and turbulence. Wind direction will determine the area of concentration of the pollute while the wind speed will vary the actual saturation in an inverse ratio. Turbulence is very important as it diffuses the foreign matter and affects the fallout rate. With a turbulent wind blowing at considerable speed, diffusion is vastly greater than the rate of molecular dispersion in more stable or static condition.

Most of us are familiar with turbulence for it is the force that causes the bumpy ride in an airplane. The absence of turbulence rewards the airline passengers with a smooth and enjoyable flight. Turbulence in the upper air can be compared with gustiness on the ground and both interacting will reduce or prevent air pollution.

The U. S. Weather Bureau analyzes cross-sectional atmospheric soundings several times daily to determine temperature and humidity readings aloft. These soundings are then plotted on a graph which shows to a great degree of accuracy the condition of stability of the air overhead and it is from these diagrams the atmospheric turbulence or gustiness can be forecast.

Atmospheric turbulence is known to vary considerably by the variations in the vertical temperature gradients within the atmosphere. One of the basic concepts of meteorology and air pollution is this fundamental relationship between the temperature gradients and atmospheric stability. It has been found that there is a definite decrease in temperature with height. This decrease is called the temperature time. Frequently, a wind, probably caused by lapse rate. However, on occasions the lapse rate can, and does, increase with height forming a thermal barrier or lid over the surrounding area which it covers.

Under normal daytime conditions, the temperature lapse rate decreases with height at an average value of 5 degrees F. per thousand feet of elevation. This gradient is technically referred to as the dry-adiabatic lapse rate. On a clear day when there is a profuse amount of sunshine heating the air very near the earth's surface, this lapse rate often becomes super-adiabatic, i.e., the temperature falls or decreases at a rate greater than the normal dry-adiabatic rate. This is brought about by the hot ground surfaces heating the air directly by contact. When this occurs, excessive turbulence is evident and the atmosphere is now in a state of instability. This is due to the fact that there is a layer of cooler air above warm or hot air which is held next to the ground. This condition exists quite frequently here in the desert southwest during the summer season and hence it is easy to comprehend why dusty breezes and winds are so common on a hot day. The winds and breezes are nature's way of trying to equalize this unstable condition within the atmosphere.

On the other hand, when there is a clear night with little or no winds, the surface of the earth is cooled by nocturnal, longwave ground radiation. In this situation, the air is cooled by the ground as it is a well known fact that the ground will lose its heat faster than the air. Under these conditions, the lapse rate can become relatively constant, or isothermal, indicating that the temperature aloft will remain the same with a change in altitude. On oc-

TABLE I

COMPARATIVE TABULATION OF AREAS AFFECTED BY AIR POLLUTION

Features	*Phoenix*	*West Coast*	*East Coast*
1. *Natural Effects:*			
a. Deterioration of paints, colors, etc.	Less known	Well known	Well known
b. Eye irritation	Reported on occasions	Frequent	Known
c. Oxidation of metals, stone, etc.	Less known	Well known	Well known
d. Soiling by particulates	Well known	Less pronounced	Well known
e. Atmospheric visibility during occurrance	5-10 miles	2-5 miles	2-5 miles
f. Seasonal occurance	Winter	All year	Fall and winter
2. *Fuel Burned:*	Hydrocarbons (gas)	Hydrocarbons (gas)	Hydrocarbons (coal - oil - gas)
3. *Humidity:*	Low to moderate	High	High
4. *Surface Sunlight:*	Reduced	Absent during attack	Absent during attack
5. *Time of Attack:*	Early mornings	Anytime	Anytime
6. *Chemicals Present:*	Sulphur Dioxide	Ozone	Sulphur Dioxide
7. *Desert Particulates:*	Abundant	None	None

casions, when the air is very calm, the temperature may even increase with height above the surface of the earth. This will create a condition known as an inversion layer. This type of air stratafication is a very stable condition and turbulence is at a minimum under these circumstances since the cold, heavier air is under a blanket of warm, lighter air.

This inversion layer behaves just like a lid or blanket over the cold air. This condition is very conducive for a local attack of air pollution since there is no pronounced air movement in any direction. Since the sunlight is reduced in intensity by the pollution, no large-scale convection currents are active which would aid in the dispersion of the pollutants. The air and all of the contaminants are trapped under this lid or inversion until some new meteorological condition will disperse the polluted air. This new meteorological condition might be in the form of a weather front or the formation of a wind-producing high or low pressure area. At any rate, a city with a pollution attack is faced with the problem for what could be a period of several hours duration to several weeks.

During the periods of calm weather when an inversion is present, the pollutants discharged into the atmosphere will tend to accumulate. The degree of pollution depends on the duration of the inversion, size of the area affected, and local conditions favoring pollution such as the industrial development of a city. Of course, topography will play an important role in many specialized cases such as the Los Angeles area. This area can be likened to a basin where the air is trapped or confined for an indefinite period of time. The author has deliberately avoided the use of the word "basin" as most laymen link the word with air pollution. Such is not the case here in Arizona and many other areas affected by air pollution. While it is true that air circulation is limited in the Phoenix-Tucson areas, it is not topographically trapped as you would find in a true basin like the Los Angeles area. The pollution attacks in Arizona frequently do not last more than a day at a convection currents, will disperse a great quanity of the pollutants by mid-afternoon provided the rate of discharged material does not exceed the dispersal rate.

The enclosed table quickly informs the reader of the basic differences in air pollution from region to region. It should be noted, however, that the regions represent several cities, each with their own characteristic air pollution problem. This table merely represents an averaging of data to simplify the summation.

Next month, the economic and legislative aspects of the problem will be discussed.

FLUOTHANE

Fred Landeen, M.D.

Fluothane: 2 Bromo, 2 Chloro, 1, 1, 1, Tri-Fluorothane

ACTION AND USES:

VOLATILE, non-flammable liquid. Its potency is approximately four times that of ether. This potency allows a narrow margin of error and therefore it is to be administered only by trained anesthetists and with equipment designed for its use.

Induction is smooth and rapid, the vapors are not unpleasant and with very little irritation to mucous membranes. Induction is achieved by vaporizing Fluothane with a flow of N20 and O2 in a nonrebreathing or partial rebreathing system. The usual complications, such as coughing, laryngospasm, etc., are uncommon. With concentration of 2 per cent to 2.5 per cent surgical anesthesia is induced in two to 10 minutes. Intubation can be done early as muscle relaxation is excellent and reflexes obtunded early, but because of the rapidity with which the anesthesia plane is lightened, intubation must be done swiftly.

Induction hypotension is sometimes seen, but usually stabilizes as soon as the concentration of Fluothane for maintenance is established. The reason for the hypotension is a moot point.

On induction, there is a depression of the respiratory minute volume and therefore assisted or controlled respiration should be used, but the patient should be watched carefully for overdosage. Sudden exposure to high concentration can lead to profound hypotension and cardiac arrest.

Fluothane sensitizes the myocardium to epinephrine and like compounds, and not infrequently produces alterations of cardiac rate and rhythm.

Maintenance is smooth and relaxation is moderately good, but succinyl choline 0.1 per cent drip is necessary for good to excellent relaxation.

D-Turbo Curare has been known to cause profound and irreversible hypotension.

Capillary oozing seems to be less with Fluothane.

A rapid, free from excitement recovery is seen with this drug, and the incidence of nausea and vomiting is low.

Administration should be restricted to qualified anesthesiologists, and in selected cases. It is especially valuable where electrocautery is to be used, and a general anesthetic is needed.

DOSAGE

Fluothane is given by inhalation in concentrations of 0.5 per cent to 4.0 per cent — usually in a nonrebreathing system. Induction is accomplished by a 2.0 per cent to 2.5 per cent concentration and maintenance by 0.5 per cent to 1.5 per cent concentration.

It is especially important that an anticholinergic drug be used in premedication of the patient to minimize bradycardia.

PREPARATION:

Liquid (inhalant) 125 cc., Ayerst Laboratories.

COMMENT:

I have used this agent for approximately 400 cases — no deaths and few complications. At first, with being unfamiliar, hypotensions and bradycardia due to overdosage did occur. But now that we maintain patients at *not over* 1.5 per cent and control relaxation and respiration with succinylcholine there have been few or no serious side effects. Premedication is usually with a narcotic and an anticholinergic drug — (usually meperidine and atropine or hyoscine) and occasionally an ataractic agent.

Recovery is rapid and the incidence of nausea and vomiting is low.

This is a very difficult agent to use because of the narrow margin of safety and should be used only by highly trained individuals or under strict supervision.

Reprints

The Statistical Investigation of Smoking And Cancer Of The Lung *

Joseph Berkson, M.D.

Sections of Biometry and Medical Statistics
Mayo Clinic
Rochester, Minnesota

"Don't think, but try." — John Hunter's advice to Jenner.[31]

"The second purpose that the statistical method has been called upon to accomplish is the prediction of the individual case from a precise knowledge of the group or mass. . . . We have seen that this kind of statistical method gives only a somewhat sterile kind of knowledge so far as concerns individuals, namely, a knowledge of betting odds. . . . Its place in the methodology of science is not an independent one. By it alone one cannot discover new truths about phenomena. But it is a highly important adjunct to other modes of research." — Raymond Pearl.[35]

According to innumerable accounts published in newspapers, magazines, and some scientific periodicals of England and the United States, it has been conclusively established that smoking is an important cause of cancer of the lung. So firmly, and even fanatically, is this opinion held in some quarters that to question it is to court the charge of being biased, surreptitiously a partisan of the interests of the "tobacco trust," indecisive where "action" is wanted, an obstructor of scientific and medical progress, or simply obstreperous. Such attacks are not pleasant to receive, as I know from personal experience, but they are not fatal. Repeated, they incite a certain immunity. So I survive to appear before your society, privileged with the opportunity to present some reasons for doubting this conclusion.

As I suppose you know, the theory that smoking causes cancer of the lung is derived from statistical studies. It had been noted in the vital statistics of several countries that the recorded death rate from cancer of the lung had increased greatly in the last several decades. Since smoking had increased during this same period, it was hypothesized that the increased deaths from cancer of the lung had been caused by smoking. Explicitly, the theory as it has been set forth is that tobacco smoke[29-30] contains benzpyrene and arsenic, both known to be carcinogens, and possibly other carcinogenic substances, and that inhaled with the tobacco smoke, these carcinogens produce cancer by acting directly on the pulmonary tissue.**

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*Reprinted from Proceedings of the Staff Meetings of the Mayo Clinic 34:206-224a (April 15) 1959.

†This paper is based on an address presented at the Federation Internationale Pharmaceutique, Brussels, September 10, 1958.[4]

**In some presentations such as that of Doll, Hill and Kreyberg,[12] and that of a "Study Group,"[38] the theory that smoking causes cancer of the lung is confined solely or mainly to the squamous or epidermoid type of cancer.

The most definitive of the statistical investigations that have been conducted are of a type which has been called "prospective," and the most notable of these that have been published are two studies, one by Doll and Hill[10-11] in England, and the other by Hammond and Horn[20-21] in the United States. In a prospective study, a group of individuals, necessarily a large group, are questioned by circular as to whether or not they smoke, in what form, how long, and so forth. Then, by one means or another, the death of any individual of the group is ascertained, and the cause of death is abstracted from the death certificate. The death rates from cancer of the lung of the various classes of smokers can then be computed and compared.

The group used by Doll and Hill for study consisted of the physicians listed in the British Medical Registry. They obtained for study in this way some 35,000 men with satisfactorily completed questionnaires. Hammond and Horn secured the co-operation of some 20,000 volunteer workers of the American Cancer Society, each of whom was requested to obtain the smoking records of 10 men acquaintances in the age range 50 to 70 years. They secured for study in this way a population of about 188,000 men, and a complete follow-up record on virtually all of them.

Reports have been issued on each of these prospective studies, incorporating about 4 or 5 years of experience. Both studies supported the hypothesis that smoking causes cancer of the lung, insofar as each showed that the death rate from cancer at this site was higher among smokers, in particular cigarette smokers, than among nonsmokers. Moreover, when the cigarette smokers were studied in relation to the amount they smoked, there was a regular progressive increase of death rate from cancer of the lung corresponding to progressive increase in the amount smoked. These results, considered together with previous less definitive but nevertheless indicative results in the same direction, were taken virtually to prove that smoking causes cancer of the lung. Why then, in the face of these findings, do I say that I have doubt of the validity of this interpretation?

This is what I shall now try to explain. Soon after the first report of Hammond and Horn,[19] I[2] published a critical appraisal of it, as well as of the first report of Doll and Hill. I was a member of the Committee of Research and Statistics of the American Cancer Society, from which the project of Hammond and Horn had been launched, and under whose formal supervision it was conducted. While the work itself, and all credit for its conduct and results, properly belonged to my friends Dr. Hammond and Dr. Horn, I felt some responsibility for its critical review. I felt very strongly that to announce definitely, on the basis of these statistical results, that smoking causes cancer of the lung, as many commentators did, was premature. For one thing, the question of the cause of cancer is basically a biological, not a statistical problem, and the statistical conclusions would have to be fully corroborated by experimental and direct observational studies before they could be considered to have been scientifically established. There was, in fact, virtually no substantial clinical, pathologic, or other independent direct evidence that smoking was the cause of cancer of the lung.[2] But, to the present point, there were some particular aspects of the reported statistics that raised serious questions regarding the assured, simple interpretation that had been given to them. The general and specific death rates, particularly in the study of Hammond and Horn, were low compared with corresponding death rates for the general population. For instance, the death rate from cancer of the lung among the smokers, though it was larger than that of the nonsmokers of the sample population, was lower than the death rate from cancer of the lung among the general population. Similarly the relative number of smokers was low in comparison with available statistics for the comparable general population. It appeared quite evident that the sampled populations studied were not representative of the reference populations from which these samples were drawn. I pointed out that, in such selected samples, a spurious statistical association could be produced by a mechanism with which I was familiar from grievous experience of my own. There was, however, another point, and it is the important one so far as the present analysis is concerned.

I have said that both studies showed an increasing death rate from cancer of the lung associated with an increase in the amount of cigarette smoking. But in the study of Hammond and Horn, which is by far the more ample of the two reviewed, this was by no means all that the study showed, as I shall exhibit in figure 1. Hammond and Horn segregated the causes of death into four groups: cancer of the lung, cancer other than that of the lung, coronary heart disease, and other diseases. In the figure is presented the age-adjusted death rate for each of these causes for each of three groups classified according to the amount of smoking of cigarettes. Surely, it is true that there is a graded increase of the death rate from cancer of the lung with increase of amount of smoking. But equally surely, there is an increase of death rate, with an increased amount of smoking, in each of the other three categories of disease into which all causes of death had been segregated. This observation prompted me to remark in the publication I have referred to, "the question raised by the findings in the American Cancer Society study . . . is not, 'Does cigarette smoking cause cancer of the lungs?' so much as it is 'What disease does cigarette smoking not cause?'" We are presented with findings that bear no particular relation to the specific increase of death rate from cancer of the lung observed in vital statistics records, nor to benzpyrene or arsenic or other substances in tobacco smoke acting as contact carcinogens. Something very different is on view here than was originally envisaged to explain the rise in death rate from cancer of the lung.

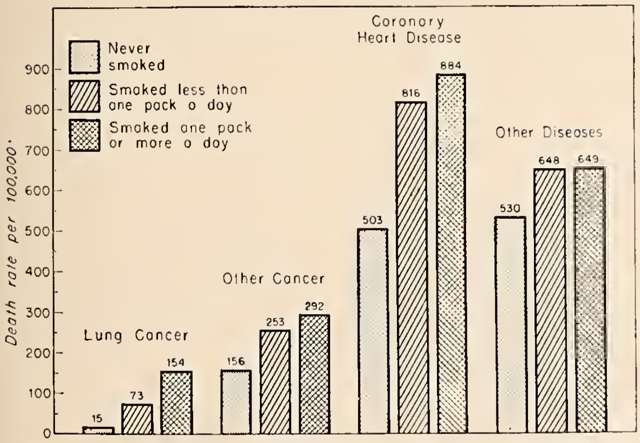

Fig. 1. Study of Hammond and Horn.[19] Relation of mortality to amount of cigarette smoking. Rates per annum, adjusted for age to total population. The rates increase steadily with amount of smoking, not only for cancer of the lung, but for each of the other categorized disease groups.

I believe that, among objective students of the problem, the emergence in the statistical data of a generalized association with many diseases was recognized as a serious difficulty for the developed theory identifying smoking as a cause of cancer of the lung. Korteweg[24] published a commentary devoted specifically to my paper. He acknowledged the relevancy of my point about the multple associations with diseases other than cancer of the lung, and also the validity of my point about selective association. He then ingeniously used one to negate the other! He made some reasonable arithmetic calculations to show that the spurious selective association which I had postulated could account for the associations observed in the disease categories other than cancer of the lung, and possibly heart disease, but that the ratio of death rate from cancer of the lung of smokers to that of nonsmokers was too large for the association to be explained in this way. We need not stop to examine the cogency of Korteweg's analysis, for the points to note here are only that a serious difficulty was recognized in the existence of the association with many classes of disease, and that Korteweg's resolution of it rested on the presence in the data of unrepresentatively low death rates. We can then pass to the second report of Hammond and Horn[20-21] and of Doll and Hill.[11]

In the second report of Hammond and Horn, the over-all death rates had increased, although they were still appreciably lower than those of the general population of the same age. The general death rates of the study of Doll and Hill also were larger in their second report than in their first. This was understandable. The population had originally been recruited from persons in relatively good health; persons who were ill in hospitals or ailing at home were excluded either deliberately or because they did not volunteer to rely to questionnaires. Since the general population does contain such individuals, the general death rates were understandably higher. With the passage of time the death rates of the groups studied could be expected to approach the general rates, and they did. Now, if the selective association which I had postulated were strongly operative in the data of the first report, since it depended on the presence of selectively low death rates, then, since these rates had increased in the data of the second reports, the association of smoking with death rate from cancer of the lung, on the postulated theory, should have been diminished. It was not; if anything it was found to be more clearly shown. But so were the associations with other diseases equally or more clearly shown. So the force of my own point regarding the possible spuriousness of the lung-cancer association, as well as Korteweg's point regarding the spuriousness of the other associations, as arising from the selective association postulated, was weakened by the results presented in the second reports.

Figure 2 is reproduced from Hammond and Horn's second report. It represents the excess deaths among the smokers, that is, the difference between the number of death observed among them and the number of what are called the "expected deaths." The last represent the number of deaths that would have occurred among the smokers, had their age-specific death rates been the rates observed among the nonsmokers. It will be noted that these excess deaths, reflecting the higher death rate for smokers in comparison with nonsmokers, are not limited to cancer of the lung. In fact only 13.5 per cent of these excess deaths are due to cancer of the lung, while 86.5 per cent are due to causes other than lung cancer. Thirteen and a half per cent, the same percentage as for cancer of the lung, were due to cancer other than cancer of the lung. By far the largest proportion of the excess deaths was attributed to coronary heart disease, but all classes of disease are included in the association.

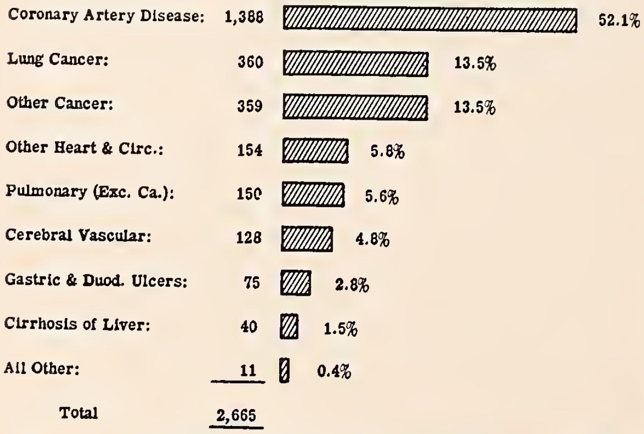

Fig. 2. From study of Hammond and Horn.[21] The number of excess deaths from various causes attributed to regular cigarette smoking, with the percentage of total excess deaths for each cause listed. All categories of cause of death show excess deaths among regular smokers; lung cancer accounts for only 13.5 per cent.

The data of the first report of Doll and Hill did not show, or at any rate did not show so clearly, an association of smoking with death rates generally, as did the report of Hammond and Horn. In the second report of Doll and Hill, for which they had additional data accumulated since their first report, using regression analysis,* they found association with cancer of the lung to be clearly shown, but they found also a suggestion of some association with a particular group of diseases which they considered as possibly related to smoking.

However, when the data as presented by Doll and Hill (which were still sparse as compared with those of Hammond and Horn) were examined from another view, a more generalized association could be observed. If we wish to discern evidence of an influence of smoking on death rate from some specific disease, we may follow a simple method frequently used, which is to examine an extreme, in the present case the extreme of heavy smoking. It is reasonable to say: "If smoking increases the risk of death, it should affect heavy smokers most; the first thing to do is to see whether the death rates of the heavy smokers are higher than the rates of those who are less than heavy smokers."

If the data of Doll and Hill[11] are examined in this way an association of smoking with disease generally is clearly indicated. Doll and Hill divided all diseases into five categories and presented data for four groups of individuals classified in respect of amount of smoking. In figure 3 the difference between the death rate for heavy smokers and each class of less than heavy smokers, namely nonsmokers, light smokers, and moderate smokers, is shown for each of these categories of cause of death. It is seen in the top line of columns that the heavy smokers have a larger death rate than the nonsmokers for each class of cause of death, and that the largest difference is not for death from cancer of the lung, but for death from coronary heart disease. In the next line a similar comparison is made with the death rates for light smokers, and here again the heavy smokers are seen to have the higher death rate for each class of disease, the largest

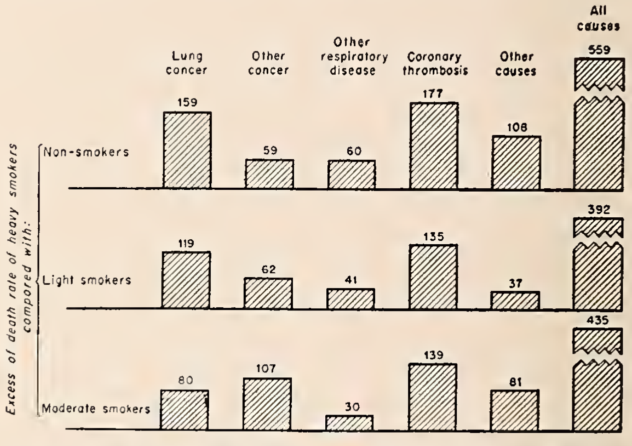

Fig. 3. From data of Doll and Hill.[11] Difference between death rate (per 100,000, standardized) for heavy smokers and for each class of less than heavy smokers, for five disease categories. The heavy smokers have a higher death rate for each category of disease; the largest difference is for deaths from coronary thrombosis.

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*With a decisive dependence on the x^2 test of significance, and with what seems an insufficient regard for errors of the second kind.

difference corresponding not to cancer of the lung, but to coronary heart disease. The comparison with the moderate smokers shown in the bottom line is similar, the heavy smokers showing the higher death rate from each disease category while the largest difference is for coronary heart disease, and even the next largest difference is not for deaths from cancer of the lung, but deaths from cancer other than cancer of the lung. Examined in this way, by comparing the death rates of the heavy smokers with those of less than heavy smokers, the data of Doll and Hill confirmed the finding in the study of Hammond and Horn of an association of smoking with death rate from disease in general.

I wish now to refer to a study the results of which have not yet been formally published. This is a prospective study also. The population investigated is that of United States veterans who have insurance policies registered with the Veterans Bureau. Under the direction of Dr. Harold Dorn of the United States Public Health Service, the individuals in the insured group were canvassed as to their smoking habits, and on the occasion of a death claim, the record of death and the necessary data from the death certificate were transferred to the primary records. The total number of the population studied is about 245,000, larger even that that of the study of the American Cancer Society. A preliminary report[13] on the results so far recorded for a 2½-year period of experience was presented at a recent conference on cancer held in London, and a brief summary with a few tables has been made widely available.

It was possible to extract data from this summary to prepare a graph of the same instructive type as was presented by Hammond and Horn. This is shown in figure 4. The total "excess deaths" are shown distributed among various causes of death grouped in the same categories as used by Hammond and Horn. It will be noted that these excess deaths are not limited to deaths with cancer of the lung, which in fact account for only 12.7 per cent of the total excess deaths.* The distribution of the excess deaths is, in detail, very similar to that shown in the results of Hammond and Horn. Dorn's report presents a tabulation which lists 26 specific disease groups — cancer of specific organs and noncancerous diseases. For 22 of these 26 diseases, the death rate was higher among regular smokers of cigarettes than among persons who had never smoked or had used tobacco only occasionally. In table 1, I present a comparison of the distribution of excess deaths in the two studies. It is seen that, in both studies, by far the largest number of excess deaths is from causes affecting the cardiovascular system, which account for 62.7 per cent in the study of Hammond and Horn, and 61.4 per cent in the study of Dorn. The proportion of excess deaths due to cancer of the lung is 13.5 per cent in the study of Hammond and Horn, and 12.7 per cent in the study of Dorn. For excess deaths from cancer other than cancer of the lung the proportions are respectively 13.5 per cent and 9.0 per cent. Examination of the rest of the figures discloses that the results in both of these large studies are closely similar.

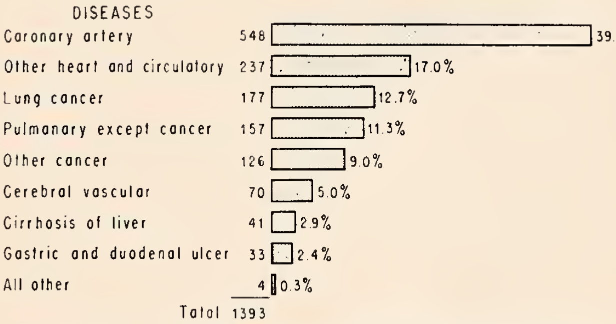

Fig. 4. From data of Dorn.[13] Excess deaths from various causes among regular cigarette smokers, over deaths among nonsmokers or only occasional smokers, with the percentage of total excess deaths for each cause listed. All categories of cause of death show excess deaths among regular cigarette smokers; cancer of the lung accounts for only 12.7 per cent.

It appears to me that hardly can there longer be any serious doubt that the definitive important finding of these statistical studies is not that there is an association between smoking and cancer of the lung,** but that there is an association between smoking and deaths from all causes generally.*** Indeed, it is hard to believe that the findings reported in these prospective studies would have been taken to indicate that smoking causes cancer of the lung, had the studies been made independently, that is, if they had not been projected to investigate the theory that smoking is the cause of the observed rise in the death rate from cancer of the lung. The observations made in these investigations are not those which were anticipated, if the theory was to be confirmed. They do not contradict that theory, but they go so far beyond the expected findings that one might say they almost disprove it, because they "prove too much."

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*In Dorn's tabulation, contributory as well as underlying causes recorded on the death certificate are included. Figure 4 therefore refers to deaths "with" a record of the specified cause, rather than "from" this cause.

**We recall, moreover, that in some presentations the putative association was confined to the epidermoid type.[12-38]

***It is noteworthy that the definitive final report of the investigation of the American Cancer Society[21] says in summary: "The most important finding of this study was the high degree of association between cigarette smoking and total death rate."

Table 1
Excess Deaths Among Regular Cigarette Smokers
Percentage of Total, by Cause of Death
Comparison, Data of Hammond and Horn, and of Dorn

Cause of death, diseases*	Per cent of total	
	Hammond and Horn[21]	Dorn[13]†
Coronary artery	52.1	39.4
Cerebral vascular	4.8	5.0
Other heart and circulatory	5.8	17.0
Total cardiovascular	62.7	61.4
Lung cancer	13.5	12.7
Cancer other than lung cancer	13.5	9.0
Pulmonary except cancer	5.6	11.3
Gastric and duodenal ulcer	2.8	2.4
Cirrhosis of liver	1.5	2.9
All other	0.4	0.3
Total, all causes	100.0	100.0

*Categories of Hammond and Horn.
†Includes underlying and contributory causes of death.

What interpretation then is to be given to them? Certainly I am not prepared to say with any degree of confidence. These stastical findings reflect an extraordinary and novel phenomenon, whatever the real nature of that phenomenon is. One point seems elementary as a well-established rule of sound scientific reasoning: We should seek a unified explanation for the general association observed. That is, we ought not give one hypothetical explanation for the association of smoking with cancer of the lung, another for the vascular diseases, another for cancer of the bladder, another for cancer of the stomach (if one can be found), another for cirrhosis of the liver and so forth, for a certain number of specified diseases, and leave the association with many (or most) diseases unexplained as for the present, to be clarified later, perhaps. To do this would violate the fundamental rule, sometimes referred to as "Occam's razor," and epitomized in Newton's[7] famous "rules of reasoning": 1. We are not to assume more causes than are sufficient and necessary for the explanation of the observed facts. 2. Hence as far as possible similar effects must be assigned to the same causes.

I[3] have ventured to suggest three explanations for consideration:

The first is that the associations are a spurious statistical phenomenon, related to the vagaries of the data of smoking history and cause of death, as they are obtained in these statistical studies. I imagine that some may consider this an irresponsible suggestion. Nevertheless, I make it seriously. I will point out (a) that the datum of smoking history is subject to wide variation, even under what are supposed to be controlled conditions, as I shall attempt to demonstrate in a projected paper; (b) that the datum of cause of death as recorded on death certificates may be subject to arbitrary variation of dimensions which would appear incredible to those who are unacquainted with their study;[40] and (c) that in none of the investigations referred to does the sample studied constitute a really adequately large proportion of the reference population. In the study of Doll and Hill, less than 70 per cent of the physicians canvassed replied with usable questionnaires. In the study reported by Dorn, 83 per cent were procured. As regards the study of Hammond and Horn, because the reference population is not definable, the proportion is undeterminable. In contrast with these figures, I may remark that in serious hospital studies set up to ascertain survival rates, a 100 per cent or close to a 100 per cent coverage of the population studied is regularly required.[6-28] Precisely how the variability of the data, with existing biases, may have produced the observed associations I shall not try to say,[*] but the findings are unexpected — even strange, and without known physical basis. I am old-fashioned enough to think that, even with what may seem to be adequate statistical control, unreliable data must always be considered capable of producing erroneous results.[†]

The second explanation is that the association has a constitutional basis. The suggestion is that persons who are nonsmokers or relatively mild smokers are constitutionally disposed to longevity, and therefore to generally low death rates, and that the disposition of these individuals not to smoke is a reflection of this constitution.

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[*] See Note 3 following the present text.

[†] One should agree with Bradford Hill,[23] however, that one should not go so far as to say "Lies, dammed lies, statistics"!

There are several independent studies which support the premise of this theory that smokers, as a class, are of different general constitutional type than nonsmokers. Two of these demonstrate,[22-26] that smokers and nonsmokers are of different psychologic types, as revealed by their replies to psychologic questionnaires and personality studies, and one[39] that the parents of smokers are more frequently affected by heart disease than are the parents of nonsmokers. R. A. Fisher,[15-16] in two small but basic studies comparing the smoking habits of monozygotic and dizygotic twins, has brought forward evidence of a genetic element of difference between smokers and nonsmokers.

The third explanation relates to a concept of the late Raymond Pearl[34] which he called the "rate of living." In this conception, there is a basic limited amount of vital energy with which an individual is endowed at birth, and from which he must draw for maintenance of life. The more physically active the individual, the more rapidly is this store expended, and the shorter is the duration of life. We may speculate that normal aging is the physical expression of this depletion. It is conceivable that smoking speeds up the normal process of aging. Increasing age increases the death rate from diseases generally, and in current times it increases the death rate from cardiovascular diseases and cancer especially. Perhaps the effect of smoking is to increase the tempo of biologic processes, and so to increase the biologic age of the affected tissues. If some such effect is real, it is reasonable to assume that other biologic processes, including mental processes, not just those affecting aging, are stimulated and a resulting increase of vitality may in this respect be considered salutary. Of course, all this is highly speculative. There are no constituents of tobacco smoke which have been observed to have such generalized effects, nor do we know what the mechanism could be for such a profound influence on fundamental biologic processes.

But for a scientist, the important aspect of a theory is not how plausible it appears, but what experiments it suggests for verification. This theory is not tested by applying the products of tobacco smoke in very high concentration to specific tissues and making observations to see whether cancer develops at the locus of application. Such experiments are, of course, essential, and it is of the first importance that they be thoroughly pursued, but they have had very equivocal results.[33]* Experiments have been done also, in which animals have been caused to inhale cigarette smoke for long periods, in an attempt to produce a bronchogenic type of lung caner, but so far these have all given negative results, that is, such cancers have not been produced.[8-25-27-33] But another type of experiment is suggested by the results of the prospective studies, for those show a generalized, not a specific localized effect. If the associations that have appeared in the statistical studies reviewed are not spurious, and if they are not the reflection of a general constitutional difference between smokers and nonsmokers, but reflect some active process that has a generalized effect, then the appropriate experiment is in the field of experimental epidemiology. It should employ large numbers of animals, on which one would make systematic observations referring to such biologic variables as growth rates, activity rates, and death rates from different causes of what may appear as "normal" deaths. This brings to mind some famous experiments of Greenwood, Hill, Topley and Wilson.[17] However, while in those experiments the interest was in the mode of spread of infectious diseases, in the experiments projected the interest would be in the incidence of trophic or so-called chronic degenerative diseases, which are characteristic of aging.

Now I have completed my paper which was necessarily brief. I apologize for what must have seemed a curious discourse to those who are unfamiliar with the voluminous literature on smoking and cancer of the lung which has been circulating in the United States and in England. I do not know how much of this literature has reached the Continent. Perhaps it has not penetrated the pharmacologic journals of your societies, or perhaps it has, or if not, perhaps it will. If it resembles much that has appeared in my country, it may seem that the subject is virtually closed, and that the statistical studies which have been completed prove that smoking causes cancer of the lung. If you will remember, from my presentation, that serious question of this conclusion has been raised, even if you do not highly regard the specific suggestions I have made, then I shall be satisfied that a useful purpose has been achieved.

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*It appears that designed statistical controls such as, for example, those used by Irwin[23a] in experiments on the carcinogenic action of mineral oils were not used in any of these experiments.

NOTE 1

Computation of a Measure of the Mortal Effect of Smoking

In the analysis of the death rates of heavy smokers and less than heavy smokers, from the data of Doll and Hill shown in figure 3, the absolute difference between the respective death rates is used for the comparisons. For instance, the death rate (per 100,000 per annum) from all causes among heavy smokers was 1884, and the death rate among nonsmokers was 1325; so 559, the difference between these is the figure plotted to represent the excess of death rate from all causes among heavy smokers. In a recent article Dr. Mindel Sheps[37] criticizes this computation. She says ". . . the difference — namely 559 additional deaths — has little meaning unless it is related to the number of potential survivors." She divides the 559, by the remainder of 100,000 minus 1325, and obtains 567 instead of 559 per 100,000 as the proper measure of the harmful effect of heavy smoking in respect of death from all causes.

Dr. Sheps' development is heuristic, and may be oversimplified, but the formula she arrives at is sound enough.* It has many applications in statistical practice, for example in accounting for natural mortality in bioassay[14] where it is called "Abbot's formula," and in estimating the net force of cancer mortality in the computation of survival rates for cancer patients.[1,5] It may be explained in terms of a simple example. Suppose one marksman, when shooting alone, has a striking rate of 10 per cent (q_1), and a second marksman, when shooting alone, has a striking rate of 20 per cent (q_2). Then if both shoot, and assuming they do not affect each other's marksmanship, what percentage of the targets will be struck? The answer is not 30 per cent! Since $.10 \times .20 = 2$ per cent of the targets will be struck by both marksmen, only 28 per cent of the targets will be struck. If q_1 is the net risk from one factor, and q_2 is the net risk from another factor, then Q, the total risk with both operating, called the crude risk, is given by

$$Q = q_1 + q_2 - q_1 q_2 \qquad (1)$$

If, now, we observe q_1, say the natural death rate among nonsmokers expressed as a probability, and Q, the death rate among heavy smokers, then the net effective death rate attributable to heavy smoking is, from (1),

$$q_2 = \frac{Q - q_1}{1 - q_1} \qquad (2)$$

Thus in the example above,

rate among nonsmokers, q_1, $= .01325$,

rate among heavy smokers, Q, $= .01884$, and

net rate due to heavy smoking, q_2, $= \dfrac{.00559}{.98675} = .00567$,

which, when expressed as per 100,000, is the measure of harmful effect obtained by Dr. Sheps.

It will be noted that formula (2) is the absolute difference, $(Q - q_1)$, divided by a correcting factor, $(1 - q_1)$. If q_1 is small, the factor will be almost unity. In raising the measured effect of heavy smoking from 559 to 567, Dr. Sheps comments "The 'harmful effect' of 567 per 100,000 happens to be nearly equal to the absolute difference of 559 per 100,000 . . . in this example simply because the denominator . . . is so close to 100 percent." Now it "happens" that in the case chosen for illustration by Dr. Sheps —deaths from all causes—the rate is the largest among the categories of causes of death concerned in the comparisons. For the specific categories of causes of death, the rates are even smaller. The computation of the net effective risk due to smoking, from the observed crude risks, in the case of specific categories of cause of death, necessitates more involved computations than for total causes. Applicable formulas are to be found in Neyman's text[32] in the section on "Evaluation of competing risks." A pertinent formula for a particular case, that of evaluating the effect that eliminating a specific cause of death will have on general mortality, was given earlier by Greville.[18] For the present problem we may estimate the net effect of smoking for a specific cause of death (assuming it has such an effect) as follows:

$$q_s = 1 - c^{-\beta_s} \qquad (3)$$

$$\beta_s = \frac{Q'_n}{Q'_t} \ln (1 - Q'_t) - \frac{Q_s}{Q_t} \ln (1 - Q_t) \qquad (4)$$

$$\log (1 - q_s) = \frac{Q_s}{Q_t} \log (1 - Q_t) - \frac{Q'_n}{Q'_t} \log (1 - Q'_t) \qquad (5)$$

where

q_s = net effect of smoking for a specific cause of death,

Q_s = death rate among smokers from the specific cause,

Q_t = death rate among smokers from all causes,

Q'_n = death rate among nonsmokers from the specific cause,

Q'_t = death rate among nonsmokers from all causes,

ln = logarithm to base e, and log = logarithm to base 10.

This formulation reduces to formula (2) in the case where q_s refers to death from all causes. When the death rates are small, q_s is given with close approximation by the absolute difference $(Q_s - Q'_n)$.

In table 2, the hypothetical effect of heavy smoking as measured by the absolute difference of the respective rates, and by the absolute difference corrected, is shown for each of the categories of death concerned. It is to be noted that the corrections leave the absolute differences practically unaffected. We see that, as judged by the corrected as well as by the uncorrected differences, the putative effect of heavy smoking relates to each of the categories of cause of death, and affects coronary thrombosis more than it affects lung cancer. This is in contrast to the impression conveyed by the "mortality ratio," also shown in the table, which leaves the impression that, overwhelmingly, there is a specific effect on lung cancer. The mortality ratio has frequently been used to measure the supposed effect of smoking on death rates. It is notable that Dr. Sheps repudiates the use of this index, even as I had repudiated it in a previous publication.[30] The point seems to merit consideration in somewhat greater detail.

Table 2
Comparison of Heavy Smokers and Nonsmokers (Data of Doll and Hill[11])
Absolute Differences and Mortality Ratios

Cause of death	Death rate among heavy smokers, Qs probability	Death rate among nonsmokers, Q'N probability	Absolute difference per 100,000		Mortality ratio,* Qs/Q'N
			Uncorrected	Corrected	
All causes	.01884	.01325	559	567	1.4
Cancer of the lung	.00166	.00007	159	160	23.7
Other cancer	.00263	.00204	59	60	1.3
Other respiratory disease	.00141	.00081	60	61	1.7
Coronary thrombosis	.00599	.00422	177	180	1.4
Other causes	.00719	.00611	108	111	1.2

*Various indices and terms for them are employed for what, in respect to the present discussion, may be regarded as equivalent to the tabled quantity. The "standardized mortality ratio" (S.M.R.) refers to the ratio of death rates adjusted to some standard age distribution. The "ratio of observed to expected deaths" is essentially an S.M.R. in which the age distribution of the population of smokers is used as standard.

The prospective studies have been considered as an analysis of experiments performed by nature. One group of persons has smoked, another has not. The first is the experimental group, the second is the control. The experiments would better be done on animals. Suppose we do some!

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*See Note 2, following.

°This is not to say that such ratios cannot have operational meaning in some other model than one which assumes that the differences in the observed rates are due to causation or active increase of deaths by smoking. For instance, in a model I[2] presented which explains the observed differences, hypothetically, on the basis of a bias arising from "selective association," the selective effect would be measured in terms of such ratios, for which the formulas are given by Brownlee.[9]

1. We expose a large group N of animals to benzpyrene, a substance suspected of killing animals by causing lung cancer. A group N' is used as controls. We observe $D_1>0$ deaths from lung cancer among the N exposed, and $D'_1 = 0$ such deaths among the N' controls. We compute

$q_1 = D_1/N>0$

$q'_1 = D'_1/N' = 0$

As a conclusion of this experiment, we will say that benzpyrene is a mortal toxin. It kills animals by causing lung cancer, and its effectiveness is measured by

$q_1 - q'_1 = q_1$

We will not say that its effectiveness is measured by the mortality ratio

$q_1/q'_1 = \infty$

We suspect that another substance X_x is deadly, killing animals by causing diseases other than lung cancer. We perform an experiment as before, but now with the substance X. We observe $D_o>0$ deaths from diseases other than lung cancer among the N exposed, and $D'_o = 0$ such deaths among the N' controls. We compute

$q_o = D_o/N>0$

$q'_o = D'_o/N' = 0$

We will conclude that substance X is deadly, killing animals by causing diseases other than lung cancer, and that its potency is measured by q_o. If $q_o>q_1$ we will say that the substance X is more effective than benzpyrene. *We will not say that they are equally potent because their mortality ratios are equal*, that is,

$q_1/q'_1 = q_o/q'_o = \infty$

2. Now suppose that we cannot have benzpyrene separately from substance X, because they are available only in a mixture of the two. We perform an experiment as above, but now with the mixture. We observe $D_1>0$, $D_o>0$ among the N animals exposed, $D'_1 = 0$, $D'_o = 0$ among the N' controls. We compute the crude rates

$Q_1 = D_1/N>0$

$Q_o = D_o/N>0$

$Q'_1 = D'_1/N' = 0$

$Q'_o = D'_o/N' = 0$

If we measure the potency of benzpyrene and substance X respectively by Q_1 and Q_o, we will be in error. These are the crude rates, and they are affected by the competition of the net risks q_1, q_o. To estimate q_1, q_o from Q_1, Q_o we must make an assumption about the time relation of the force of mortality (instantaneous risk) for the net risks. If, with the q's acting alone (net risks), the instantaneous risk, β, for each risk is considered constant over the time period during which the population is observed (a year, say), and they act independently, even in the mixture, then the following are the relationships among the relevant quantities:

$$q_1 = 1 - e^{-\beta_1} \tag{6}$$

$$q_o = 1 - e^{-\beta_o} \tag{7}$$

$$\beta_1 = -\frac{Q_1}{Q_t}\ln(1-Q_t) \tag{8}$$

$$\beta_o = -\frac{Q_o}{Q_t}\ln(1-Q_t) \tag{9}$$

$$Q_1 = \frac{\beta_1}{\beta_1+\beta_o}Q_t \tag{10}$$

$$Q_o = \frac{\beta_o}{\beta_1+\beta_o}Q_t \tag{11}$$

where the total death rate (all causes) is $Q_t = Q_1 + Q_o$. For small values of q_1, q_o these are given with good approximation by,

$$q_1 \approx Q_1 \tag{12}$$

$$q_o \approx Q_o \tag{13}$$

If $q_o>q_1$ we will say that substance X is more effective than benzpyrene. *We will not say that they are equally potent because their mortality ratios are equal*, that is,

$Q_1/Q'_1 = Q_o/Q'_o = \infty$

3. Now suppose the animals in question are subject to a natural mortality from lung cancer and also from diseases other than lung cancer, and that such deaths, when they occur, are indistinguishable from those due to benzpyrene and substance X. We will assume that for each cause of death, if it were the only existing cause of death, the instantaneous risk is constant over the observation period, and will represent the constant value by β. Then the net risks, that is, the probabilities of death in the unit period, if each cause were acting alone, are:

$$q_1 = 1 - e^{-\beta_1} \tag{14}$$

$$q_o = 1 - e^{-\beta_o} \tag{15}$$

$$q'_1 = 1 - e^{-\beta'_1} \tag{16}$$

$$q'_o = 1 - e^{-\beta'_o} \tag{17}$$

where

q_1 is the death rate from lung cancer caused by benzpyrene,

q_o is the death rate from other diseases caused by substance X,

q'_1 is the death rate from lung cancer resulting from natural causes, and

q'_o is the death rate from other diseases resulting from natural causes.

We will observe as the corresponding crude risks among the controls

$$Q'_1 = \frac{\beta'_1}{\beta'_1+\beta'_o}Q'_t \tag{18}$$

$$Q'_o = \frac{\beta'_o}{\beta'_1+\beta'_o}Q'_t \tag{19}$$

where the total death rate is $Q'_t = Q'_1 + Q'_o$ and in the experimental group

$$Q_1 = \frac{\beta_1+\beta'_1}{\Sigma\beta}Q_t \tag{20}$$

$$Q_o = \frac{\beta_o+\beta'_o}{\Sigma\beta}Q_t \tag{21}$$

$$\text{where } \Sigma\beta = \beta_1 + \beta'_1 + \beta_o + \beta'_o \tag{22}$$

and the total death rate is $Q_t = Q_1 + Q_o$.

The formulas for recovering q_1 and q_o from the observed rates Q_1, Q_o, Q'_1, Q'_o are

$$\log(1-q_1) = \frac{Q_1}{Q_t}\log(1-Q_t) - \frac{Q'_1}{Q'_t}\log(1-Q'_t) \tag{23}$$

$$\log(1-q_o) = \frac{Q_o}{Q_t}\log(1-Q_t) - \frac{Q'_o}{Q'_t}\log(1-Q'_t) \tag{24}$$

For small values of q_1 and q_o, these are given with good approximation by the differences

$q_1 \approx Q_1 - Q'_1$

$q_o \approx Q_o - Q'_o$

If $q_o>q_1$ it means that the substance X, in its action of producing deaths from diseases other than lung cancer, is more effective than benzpyrene in causing deaths with lung cancer. If one used the mortality ratios Q_o/Q'_o and Q_1/Q'_1 to measure the effects of substance X and benzpyrene respectively and if it happened that q'_o was much larger than q'_1, then even if q_o was much larger than q_1, it might appear that substance X is little if at all effective, while benzpyrene is very effective.

This is about what has happened in the discussion of smoking as a cause of lung cancer. Since the natural mortality of lung cancer is relatively low, the use of the mortality ratio, that is, the ratio of the death rate of smokers to

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†Substance X can be considered to represent the combined effect of many factors.

the death rate of nonsmokers, has made it appear that the effect of smoking on the death rate from lung cancer is exceedingly great. For diseases other than lung cancer, for which the natural death rate is much larger and the mortality ratio therefore not so large, the effect of smoking on death rate has appeared much smaller. If a correct measure of the effect of smoking in increasing death rate is used, supposing this to be the explanation of the larger recorded death rate for the smokers, the reverse comparison results.

NOTE 2

Sheps' Argument*

Suppose it has been suggested that a certain drug is mortally toxic for some specified animals. The drug's action is not necessarily immediate; it may take time for its effect to be exhibited in the death of the animal. It is decided to test the drug by administering it to a large sample of animals, and then to observe them for a year.

One hundred thousand animals are used for the experiment. It is known that their natural mortality is 10 per cent per annum, so if the drug is not administered, 10,000 of the animals will die in a year. The drug is administered to each animal and the colony is observed for one year. It is found that 15,000 animals have died.

That the experimenter should conclude that 5000 animals have been killed by the drug seems unquestionable. There are some certain (unidentifiable) animals, numbering 5000, who would have been alive at the end of the year, had the drug not been administered to them. How shall we express the mortal effectiveness of the drug?

We will not say "The drug kills 5000 animals." We will realize that had the drug been administered to 200,000 instead of 100,000 animals, 30,000 would have been found dead, and we should have concluded that the drug had killed 10,000 of these. Perhaps we will say "The drug kills 5 per cent of the animals to which it is administered (5000/100,000)." In a sense that should be clear from the description of the experiment, this statement would be correct.

But Sheps says this is not a sound measure of the killing power of the drug. Since 10,000 of the animals would die in the year even if the drug were not administered, effectively only 90,000 animals were "exposed to the risk" of being killed by the drug. One should divide 5000, which is the number killed by the drug, by 90,000, and conclude that 5.56 per cent measures the killing power of the drug, not 5.00 per cent.

Although, considered as a precise analysis of the problem, this presentation is doubtless an oversimplification, I agree that it is essentially correct. But whether we should divide the 5000 by 100,000 or by 90,000 is not the important question here — it does not make an enormous difference. The important question is "By what rationale does one conclude that one should divide 5000 by 10,000 (mortality ratio) to measure the lethal effectiveness of the drug?" As suggested by Sheps, smoking possibly can be fatal to the living, but not to the dead. This is the question which those writers should answer who maintain that mortality ratios, computed from data of the prospective studies, are proper measures of the supposed mortal effects of smoking.

NOTE 3

Mortality Ratio

The mortality ratios are inappropriate indices of the effect of smoking, if the higher death rates among smokers are considered to reflect an actual causal effect of smoking in increasing the probability of death. But the ratios may be quite appropriate for consideration on some other hypothesis of the origin of the recorded higher death rates. If we accept the idea that the higher general death rates among smokers has a basis in a different physical constitution of persons who smoke and those who do not smoke, then a bias in diagnosis would result in high ratios for diseases believed to be related to smoking. For instance, Wynder[41] has noted that physicians use the smoking history of patients as an aid in differential diagnosis of lung conditions. Therefore in doubtful cases, if the patient is a smoker, the physician will be inclined to make the diagnosis of lung cancer, just as in other doubtful cases, if the patient is an imbiber of alcoholic beverages, the physician will be inclined to make a diagnosis of alcoholic cirrhosis of the liver. This is logical, if the phyician believes that smoking or use of alcohol is related to the development of the disease in question (likelihood principle). If there is a larger general death rate among smokers, the tendency of physicians to diagnose conditions which they think are caused or aggravated by smoking would result in a relatively greater proportion of such diagnoses among smokers. This sort of bias would tend to increase the number of such diagnoses in proportion to their natural frequency, since its effect would be in direct relation to the frequency with which such cases arise as diagnostic problems. On the basis of such an hypothesis, therefore, one would expect the mortality ratios to be higher with those diseases which physicians think are related to smoking. This would explain the paradox that the ratios are not in order with the absolute differences, as one would expect them to be if both reflected a causal or aggravating effect of smoking on these diseases. It would also explain the paradox of the failure to produce bronchogenic lung cancer in animals experimentally by subjecting them to heavy smoking, in contrast with the ready ease with which apparent evidence that smoking causes lung cancer in man can be found statistically. Scientists generally have been impressed by this paradox, and it was commented on by the English publication Nature:[36] "The present position would seem to be summed up in a most interesting paradox: Statistically, the case against cigarettes grows more and more convincing at the same time as, experimentally . . . it seems to grow thinner and thinner." This opinion, expressed late in 1956, seems equally valid at the time of the present writing (1959).

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*As interpreted by the present writer.

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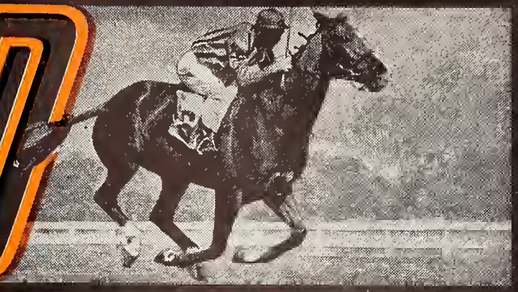

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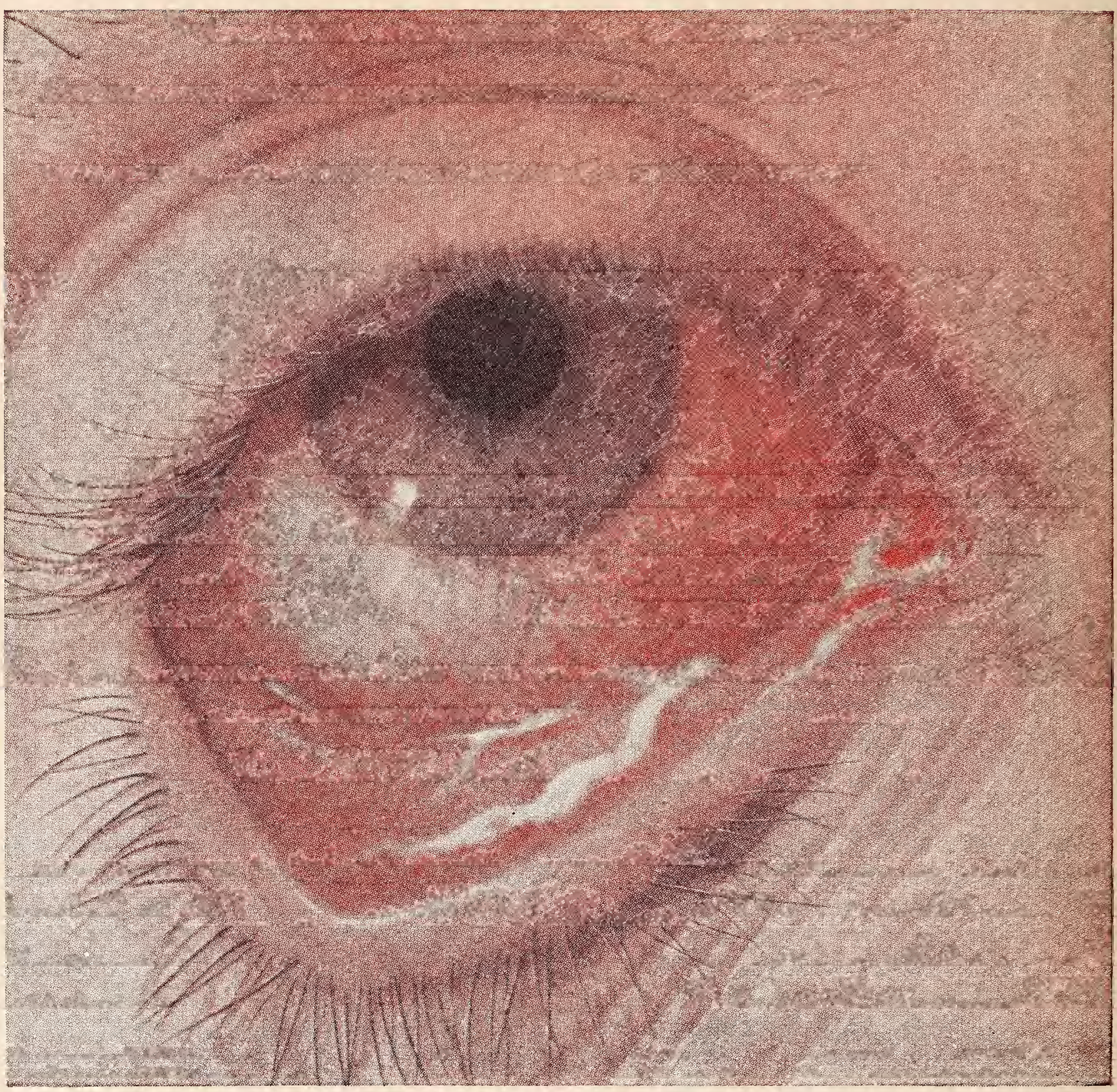

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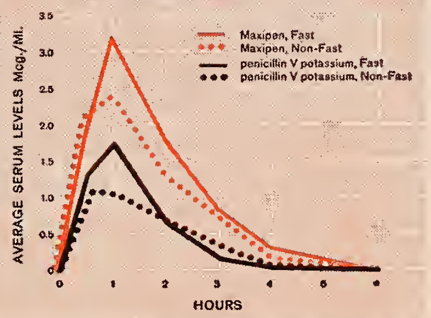

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The Annual Meeting of the Arizona Heart Association will be held on Saturday, May 21, at the Valley Ho in Scottsdale. All physicians are cordially invited to attend the sessions that will begin at 2:30 P.M.

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OGDEN SURGICAL SOCIETY

The Fifteenth Annual Meeting of the Ogden Surgical Society is scheduled for May 18, 19 and 20, 1960, Ogden, Utah. The scientific meetings will be held in the Orpheum Theatre, 2520 Washington Boulevard. The following doctors have been obtained as guest speakers:

Joel Wilson Baker
William H. Beierwaltes
John Caffey
Clarence Crafoord
Heinz F. Eichenwald
Frank H. Gardner
Leonard J. Goldwater
Edward H. Hashinger
C. Paul Hodgkinson
Irwin H. Kaiser
A. Edward Maumenee
Alton Ochsner
Alton Ochsner, Jr.
William H. ReMine
Jonathan E. Rhoads

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THE 109TH ANNUAL A.M.A. MEETING

The 109th annual meeting of the American Medical Association will be a forum presented by some of the nation's top medical men.

Approximately 2,000 physicians, all outstanding in their field, will participate in presenting the scientific program of the meeting to be held in Miami Beach, June 13-17.

ART WORKS EXHIBITION

The 23rd annual exhibition of art works by American physicians will be held June 13 through June 18, 1960, at the Miami Beach Exhibition Hall and Auditorium.

Held in conjunction with the annual convention of the American Medical Association, the show will include over 300 works of art in oil, water color, sculpture, crafts, photography and lithography.

Participants and prospective exhibitors may obtain further information from Dr. Kurt F. Falkson, 7 East 78th Street, New York City, Secretary of the American Physicians Art Association.

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POST GRADUATE SEMINAR

Post-graduate Seminar in Arthritis and Related Diseases will be held June 11-12, 1960 in the Diplomat Hotel, Hollywood-By-The-Sea, Florida, immediately following the Annual Meeting of the American Rheumatism Association, and immediately preceding the Annual Meeting of the American Medical Association. This course is acceptable for 8 hours Category I credit by the Academy of General Practice.

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9-13	American College of Physicians Postgraduate Course No. 4 "Early Detection and Prevention of Disease"	Philadelphia, Pa.
11-13	American Association of Genito-Urinary Surgeons	Dearborn Inn Dearborn, Mich.
11-13	American Association for Thoracic Surgery	Deauville Hotel Miami Beach, Fla.
15-18	International College of Surgeons, International Congress	Rome, Italy
15-20	National Tuberculosis Association The American Trudeau Society National Conference of Tuberculosis Workers	Statler-Hilton and Biltmore Hotels Los Angeles, Calif.
16-20	American College of Physicians Postgraduate Course No. 5 "Current Research in Cardiovascular Disease"	National Heart Inst. Bethesda, Maryland
23-26	American College of Physicians Postgraduate Course No. 6 "The Hypertensive Diseases"	Boston, Mass.
June, 1960		
3	ACS Board of Directors Meeting	Los Angeles, Calif.
5-10	National Conference on Social Welfare	Atlantic City, N. J.
6-24	Trudeau School of Tuberculosis and Other Pulmonary Diseases — Forty-fifth Session	Saranac Lake, N. Y.
8-12	American College of Chest Physicians	Miami Beach, Fla.
13-17	American Medical Association — Annual Meeting	Miami Beach, Fla.
13-17	Canadian Medical Association	Banff, Alberta
	International Congress of Clinical Pathology	Madrid, Spain
20-24	American College of Physicians Postgraduate Course No. 7 — "Internal Medicine"	Indianapolis, Ind.
July, 1960		
18-23	International Congress of Endocrinology	Copenhagen, Denmark
20	ACS Research Committee	New York City
20-21	Rocky Mountain Cancer Conference	Denver Hilton Hotel Denver, Colo.
Aug., 1960		
2-5	International Association of Laryngectomees — Annual Convention	Chase Hotel St. Louis, Mo.
8-11	National Medical Association, Inc.	Penn-Sheraton Hotel Pittsburgh, Pa.
21-26	Third International Congress of Physical Medicine	The Mayflower Hotel Washington, D. C.
24-27	International Congress of Internal Medicine (Sixth)	Basel, Switzerland
27-9/1	American Hospital Association	Civic Auditorium San Fanrcisco, Calif.
28-9/1	International Congress on Diseases of the Chest	Vienna, Austria
Sept., 1960		
11-15	International College of Surgeons Twelfth International Congress	New York City
13-15	Fourth National Cancer Conference	Minneapolis, Minn.
22-26	International Cancer Cytology Conference	Madrid, Spain
25-30	College of American Pathologists	Chicago, Ill.
27-10/5	Pan-Pacific Surgical Association — Eighth Congress	Honolulu, Hawaii

Oct., 1960		
10-14	American College of Surgeons 46th Annual Clinical Congress	San Francisco, Calif.
Nov., 1960		
19-21	International Symposium on Fibrinolysis	Aspen, Colo.

REGIONAL SPRING AND SUMMER MEETINGS

May, 1960		
12-14	Nevada Academy of General Practice	Reno, Nevada
16-18	American Ophthalmological Society	Colorado Springs, Colo.
18-21	American Academy of General Practice New Mexico Chapter	Rudioso, New Mexico
June, 1960		
1-3	Physical Medicine and Rehabilitation in Neuromuscular and Medical Conditions University of Colorado Medical Center	Denver, Colorado
17-19	Conference on Research in Emphysema	Aspen, Colorado
20-25	Clinical Hematology (limited to 12 registrants) University of Colorado Medical Center	Denver, Colorado
22-25	Society of Nuclear Medicine	Estes Park, Colorado
27-29	Obstetrics and Gynecology University of Colorado Medical Center	Denver, Colorado
July, 1960		
5-8	Ophthalmology	Aspen, Colorado
18-21	New Mexico Chapter, American Academy of General Practice, Ruidoso Summer Clinic	Rudioso, New Mexico
20-21	Rocky Mountain Cancer Conference	Denver, Colorado
21-23	Dermatology for General Practitioners University of Colorado Medical Center	Denver, Colorado
27-29	American Academy of Pediatrics, Regional Meeting	Denver, Colorado
Aug., 1960		
10-13	Rocky Mountain Radiological Society	Denver, Colorado
11-13	Medical Statistics for the Clinician "What Numbers Can You Believe?" University of Colorado Medical Center	Denver, Colorado
15-19	Western Cardiac Conference	Denver, Colorado
31-9/6	Pediatrics	Estes Park, Colorado

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SPRING AND SUMMER, 1960

June 24-17 — SURGICAL ANATOMY
June 24 — Head and Neck
June 25 & 26 — Thorax, Abdomen and Pelvis
June 27 — Extremities
July 17-20 — GENERAL PEDIATRICS
University Conference Center
Lake Arrowhead
July 20-24 — ADVANCED SEMINARS IN INTERNAL MEDICINE
University Conference Center
Lake Arrowhead
July 25 & 26 — DERMATOLOGY IN OFFICE PRACTICE
July 27-31 — ADVANCED SEMINARS IN DERMATOLOGY
University Conference Center
Lake Arrowhead
August 3-5 — ANESTHESIA FOR SPECIAL PROCEDURES
August 17 & 18 — ARTHRITIS AND RHEUMATISM
August 26 & 27 — OBSTETRICAL PROCEUDRES, COMPLICATIONS AND ADVANCES

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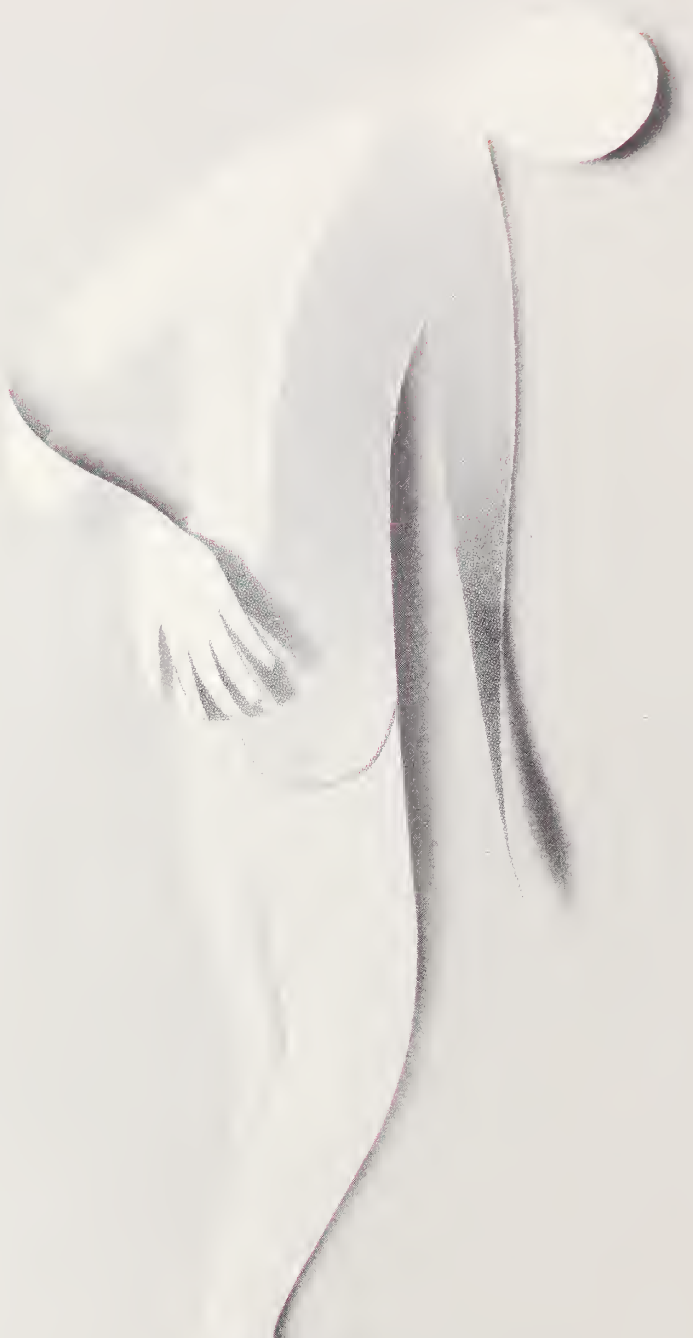

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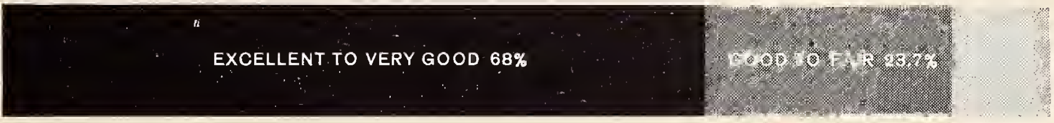

*Investigators' reports to the Medical Department, Wallace Laboratories. (Total of 278 cases)

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1. Kestler, O.: In The Pharmacology and Clinical Usefulness of Carisoprodol, Wayne State University Press, Detroit, 1959. 2. Berger, F. M.; Kletzkin, M.; Ludwig, B. J.; Margolin, S., and Powell, L. S.: J. Pharm. Exp. Ther. *127*:66 (Sept.) 1959. 3. Spears, C. E. and Phelps, W. M.: Arch. Pediat. *76*:287 (July) 1959. 4. Phelps, W. M.: Arch. Pediat. *76*:243 (June) 1959. 5. Friedman, A. P.; Frankel, K., and Fransway, R. L.: Papers presented at Scientific Meeting, New York State Society of Industrial Medicine, Inc., New York, Sept. 30, 1959. 6. Kuge, T.: Unpublished reports. 7. Ostrowski, J. P.: Orthopedics *2*:7 (Jan.) 1960.

Literature and samples on request

Also available on request: The Pharmacology and Clinical Usefulness of Carisoprodol, Wayne State University Press, Detroit, 1959. (185 pages)

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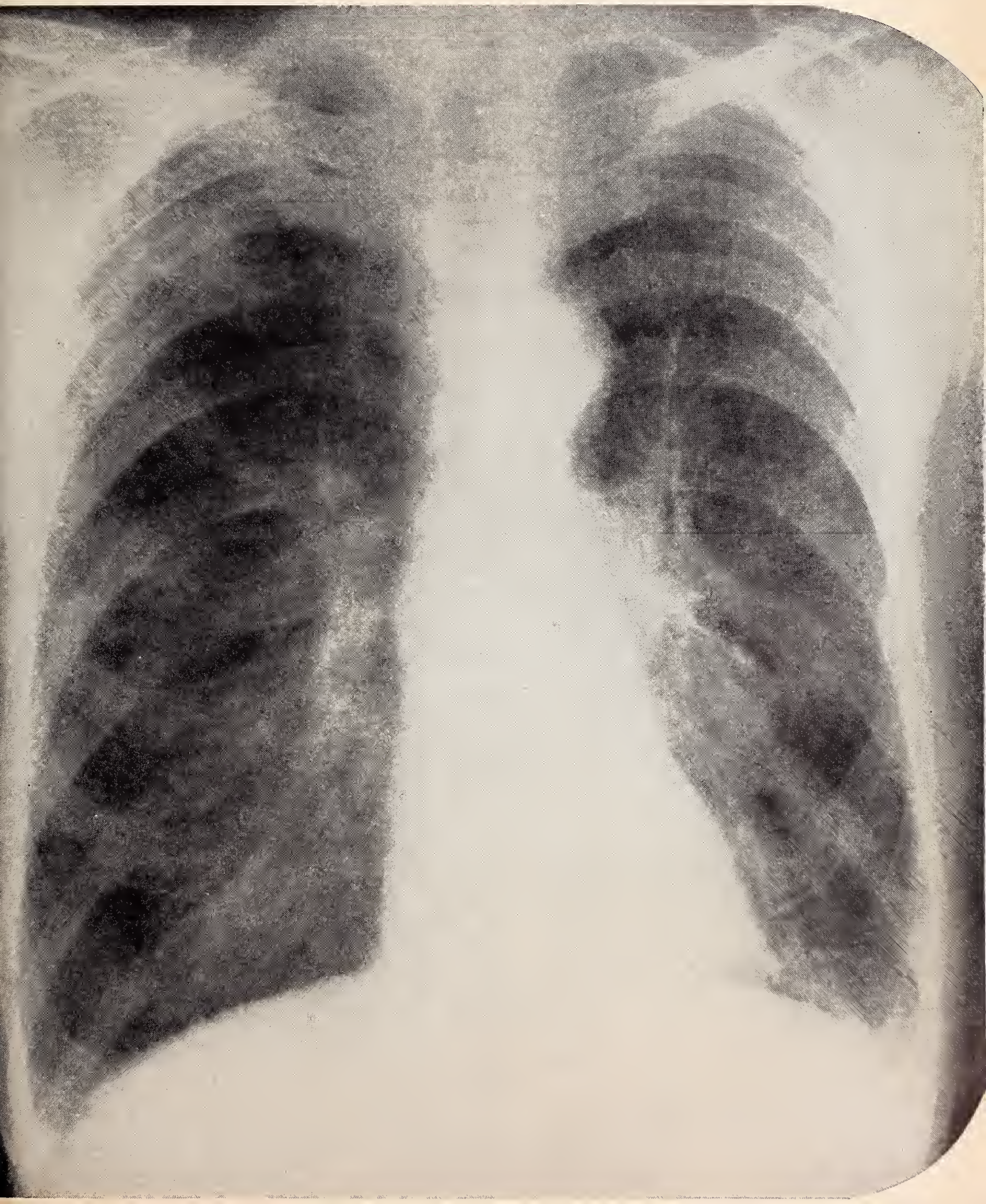

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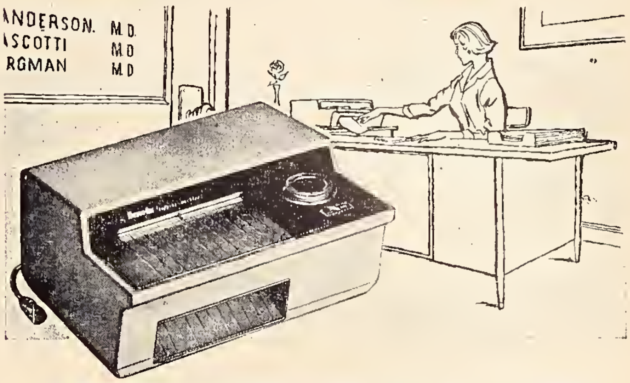
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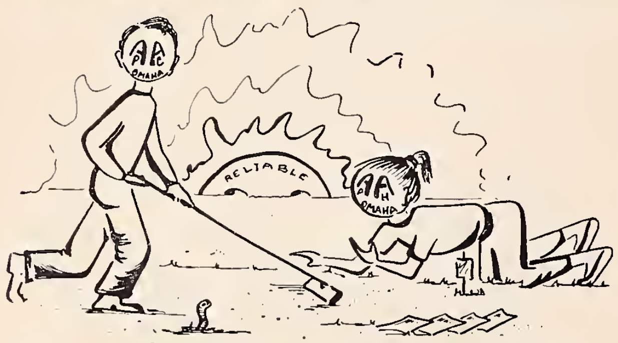

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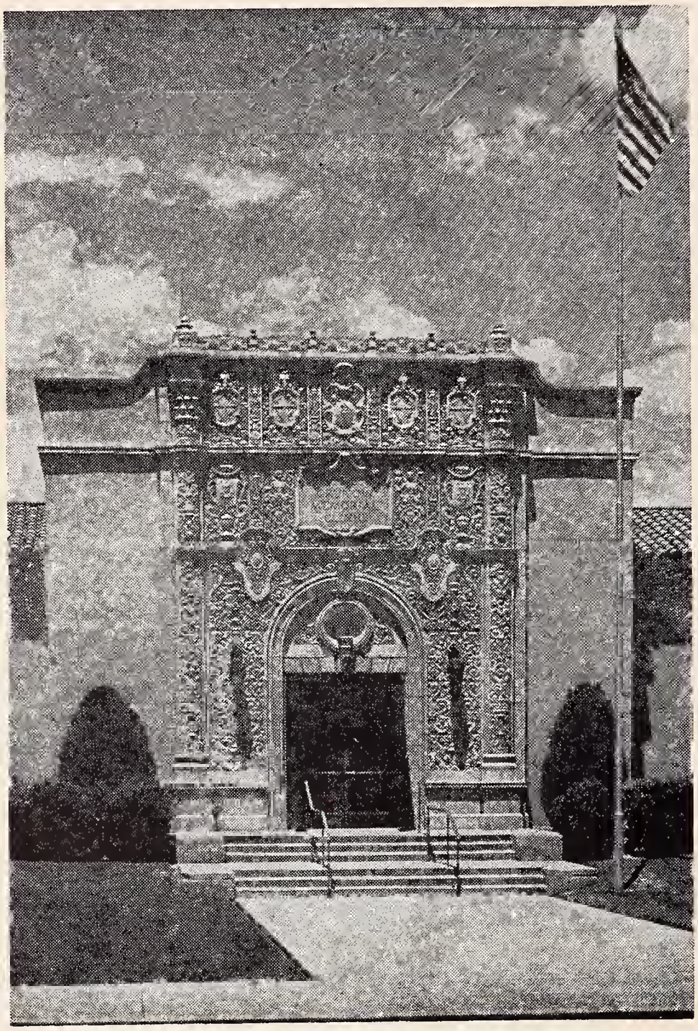

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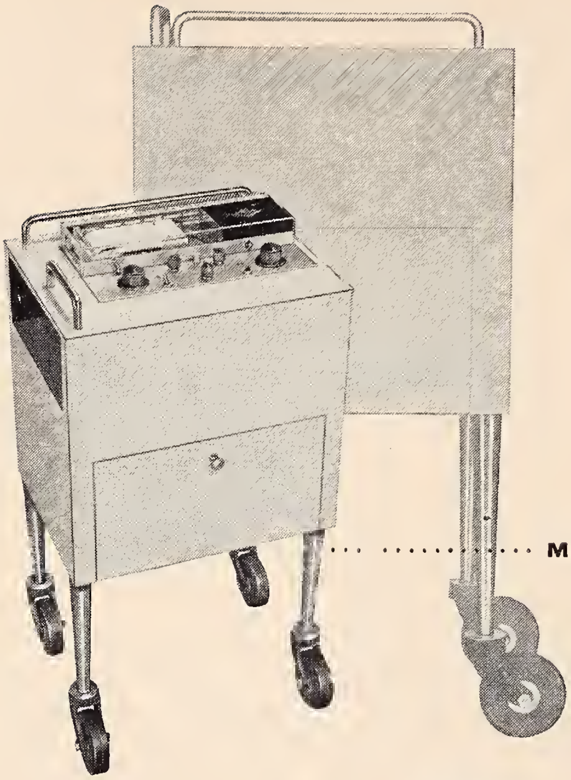

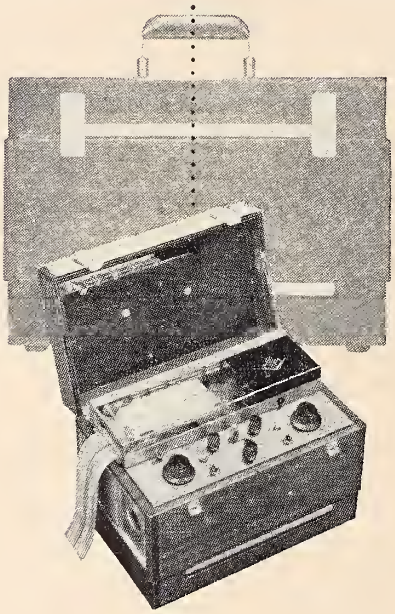

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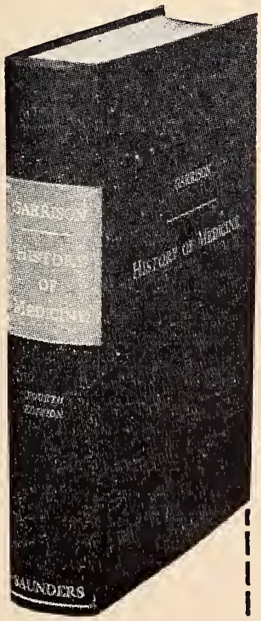

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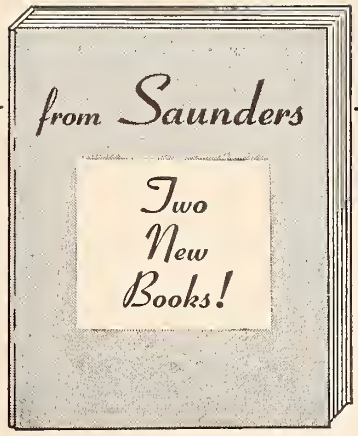

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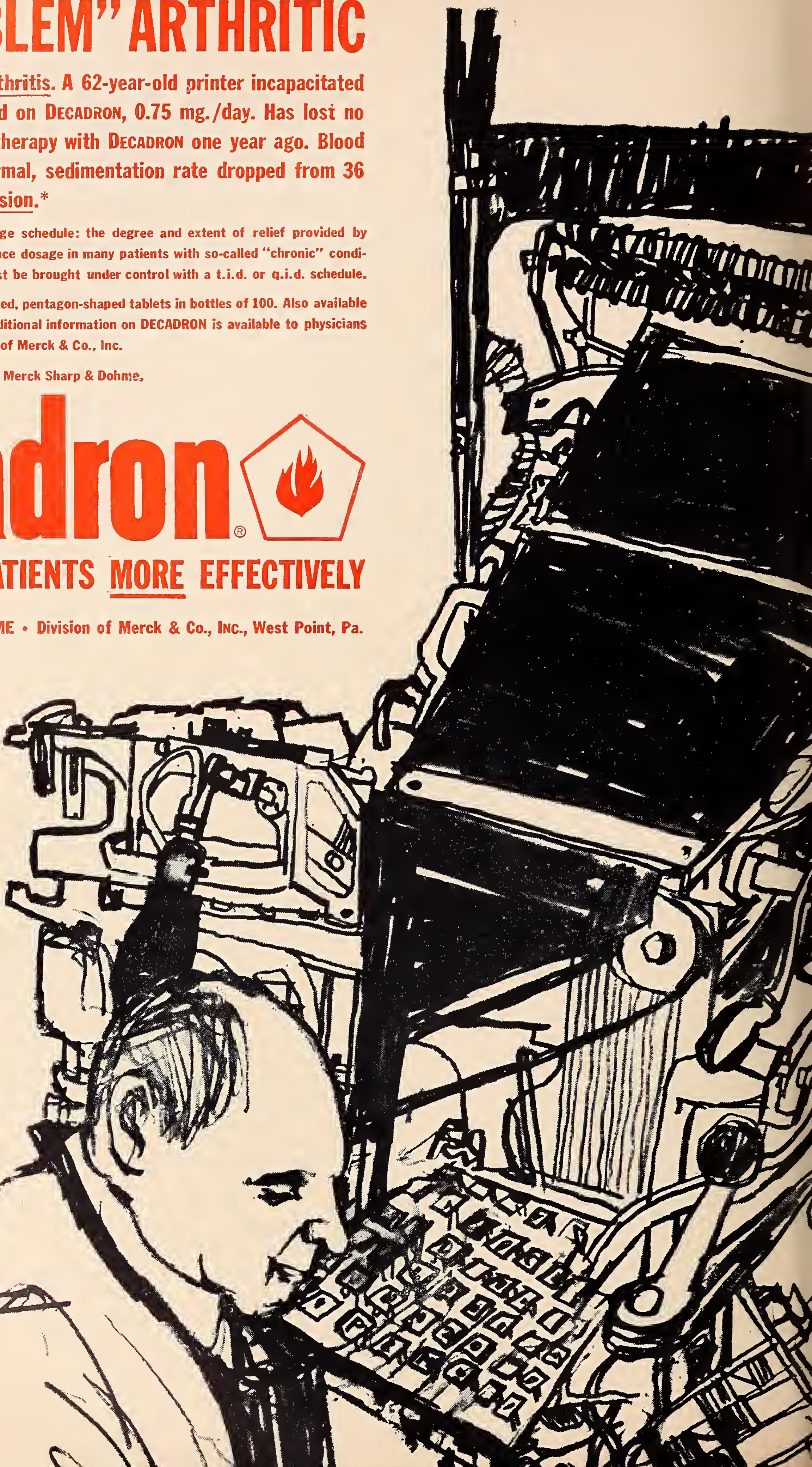

Arizona Medicine
JOURNAL OF ARIZONA MEDICAL ASSOCIATION

MEDICAL SOCIETY OF THE UNITED STATES AND MEXICO

June, 1960 Vol. 17, No. 6

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Published monthly by the Arizona Medical Association, Inc. Business office at 1021 Central Towers Building, Phoenix, Arizona. Subscription $5 a year, single copy 50 cents. Entered as second class matter March 1, 1921, at Postoffice at Phoenix, Arizona, Act of March 3, 1879.

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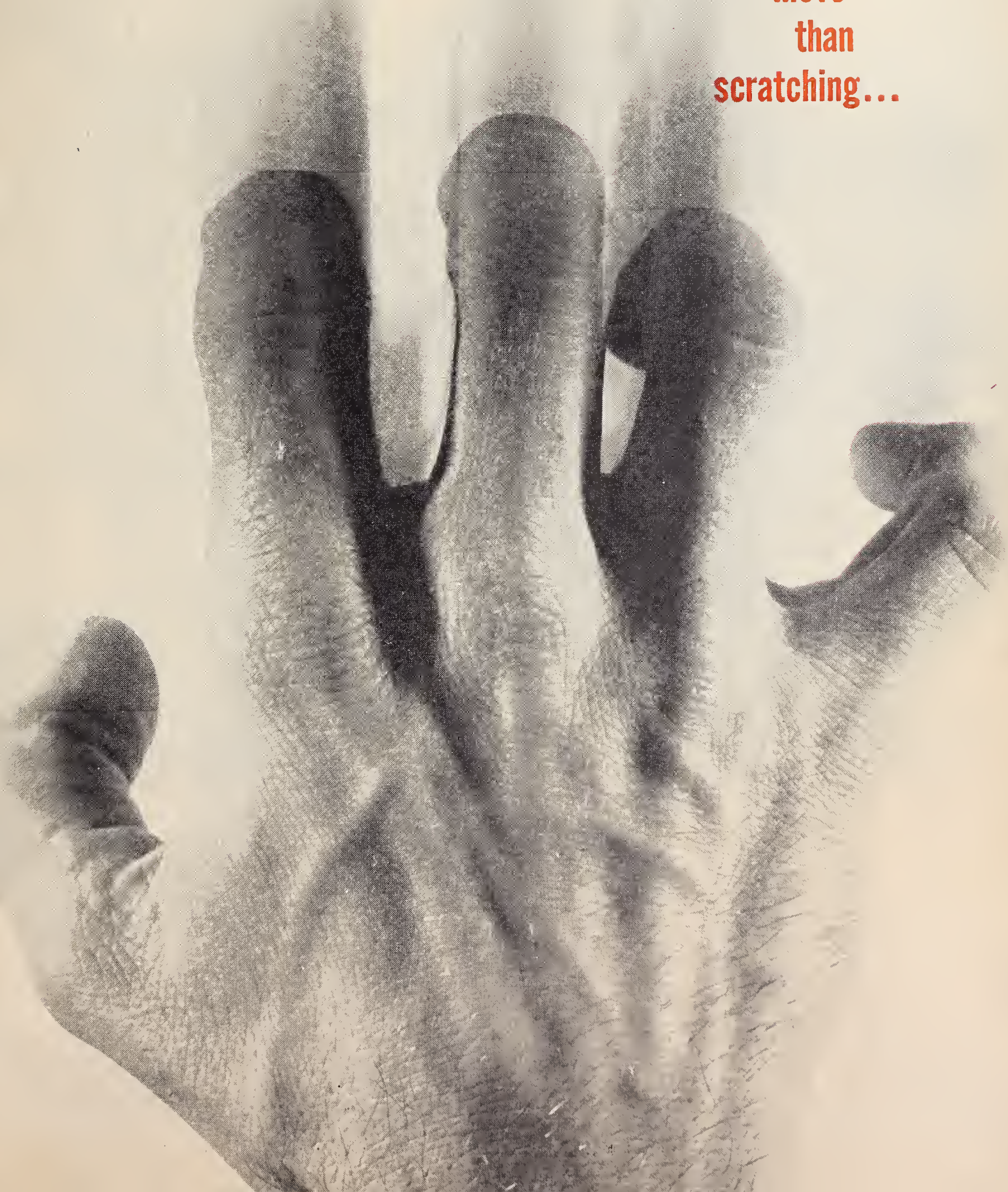

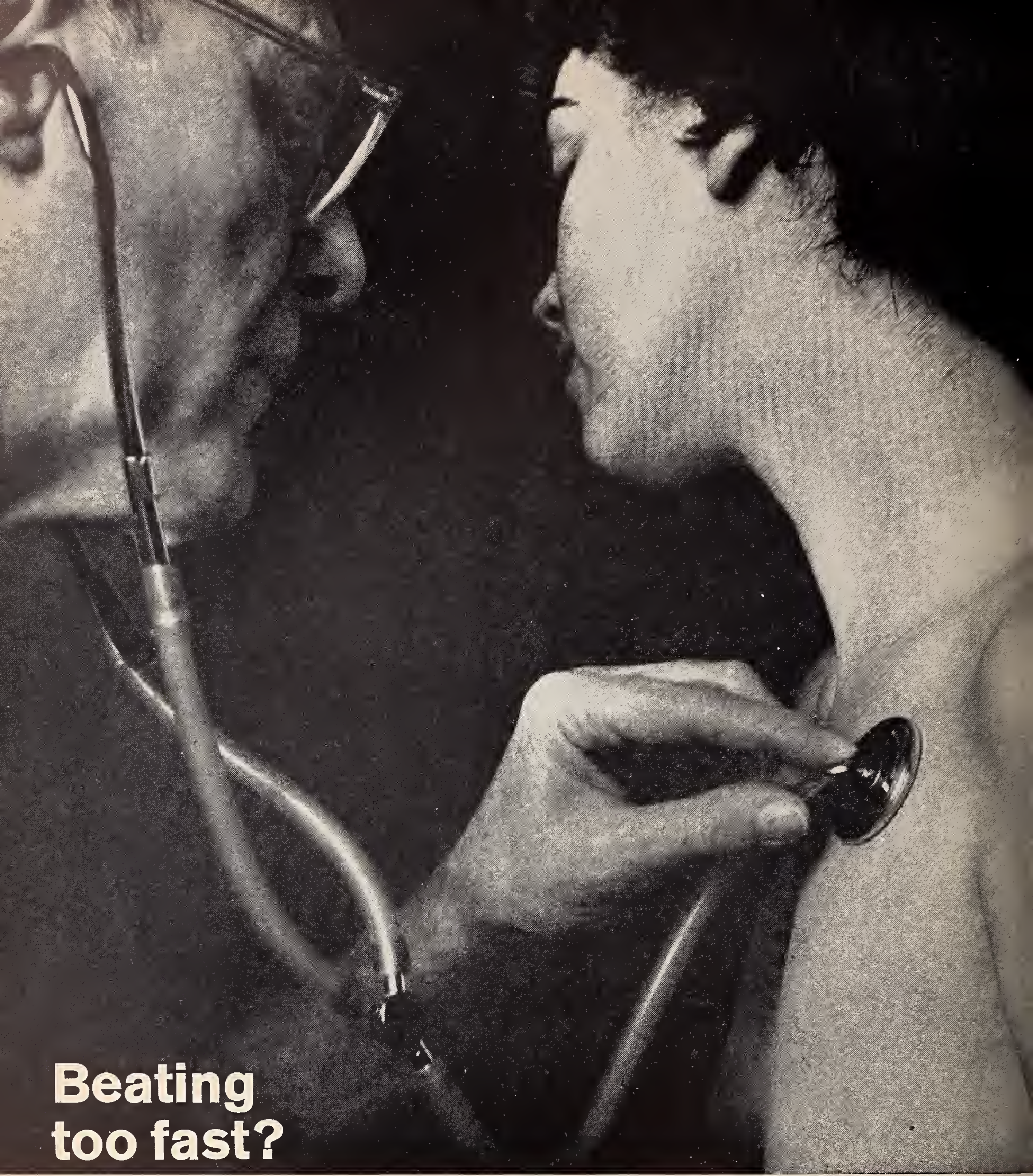

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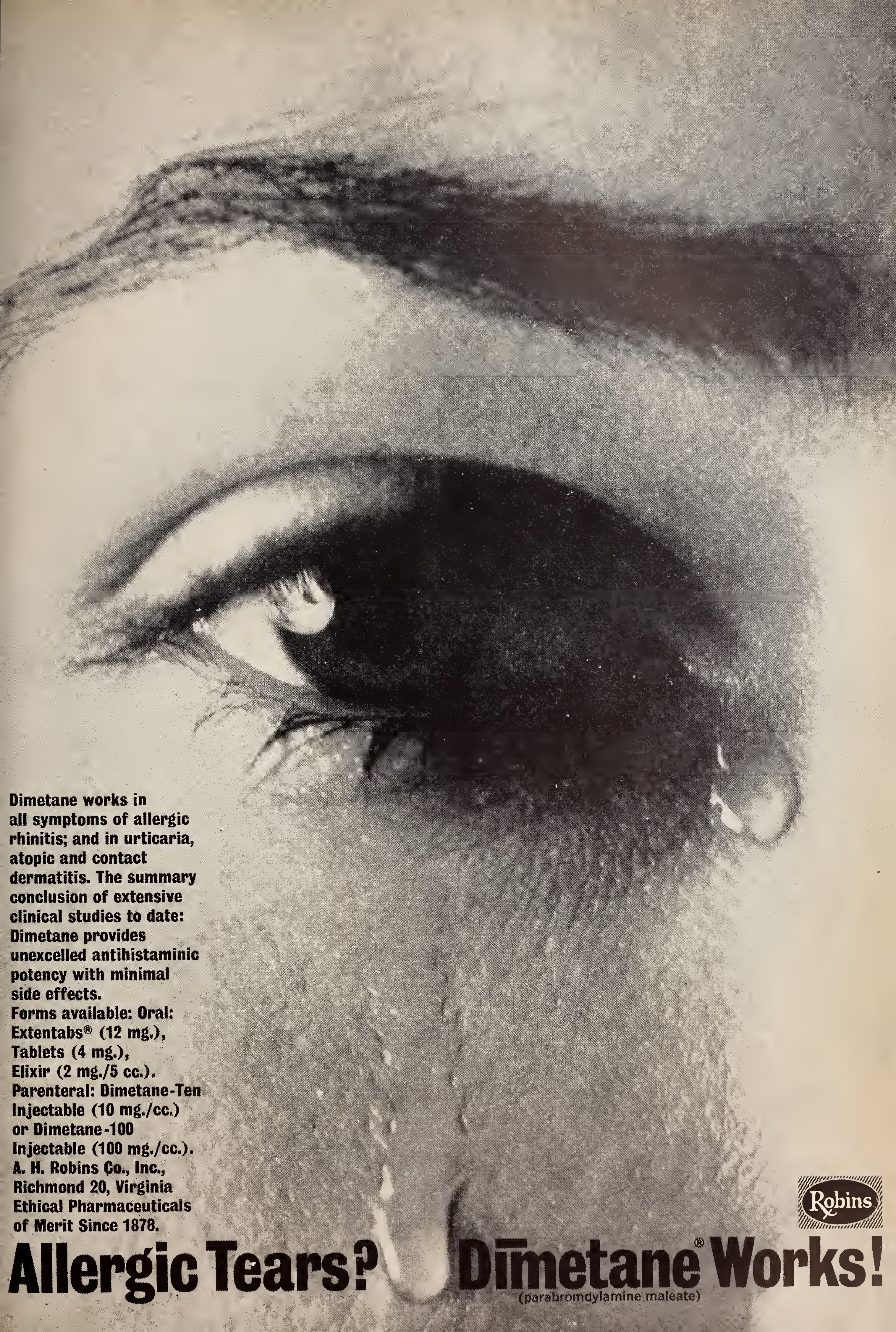

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Acid stable, highly soluble

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May be administered without regard to meals. However, highest absorption is achieved when taken just before or between meals.

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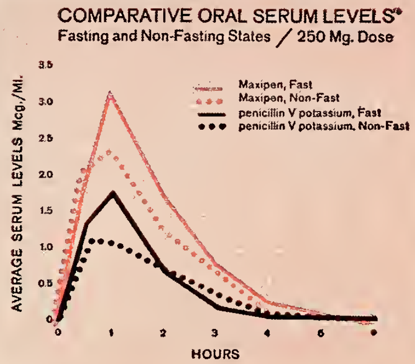
Indicated in infections caused by streptococci, pneumococci, susceptible staphylococci, and gonococci

DOSAGE: For moderately severe conditions, 125 to 250 mg. three times daily. For more severe conditions, 500 mg. as often as every four hours around the clock.

NOTE: To date, MAXIPEN has not shown less allergic reactions than older oral penicillins. Usual precautions regarding penicillin administration should be observed.

SUPPLIED: MAXIPEN TABLETS, scored, 125 mg. (200,000 units), bottles of 36; 250 mg. (400,000 units), bottles of 24 and 100 tablets. MAXIPEN FOR ORAL SOLUTION; reconstituted each 5 cc. contains 125 mg. (200,000 units), in 60 cc. bottles.



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WHAT IT IS:

A combination of Atabrine® hydrochloride 25 mg., Aralen® phosphate 65 mg. and Plaquenil® sulfate 50 mg.

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Treatment of lupus erythematosus (chronic discoid type) and polymorphic light eruptions (light-sensitivity eruptions, solar urticaria or dermatitis).

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Each of the three components produces beneficial response in lupus erythematosus and light-sensitivity eruptions. Since the dose of each of the Triquin components is very low, overall toxicity is reduced and clinical tolerance improved. Furthermore, the three components appear to act synergistically.

HOW SUPPLIED:

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Write for TRIQUIN booklet.

DOSAGE:

Lupus. Average initial adult dose, 1 or 2 tablets after meals and at bedtime. Dosage should be reduced gradually at two week intervals to 1 or 2 daily.

Light-Sensitivity Eruptions. Average initial adult dose, 1 tablet after breakfast and lunch. May be reduced after several weeks to maintenance dosage of 1 tablet daily.

Triquin, Atabrine (brand of quinacrine), Aralen (brand of chloroquine), and Plaquenil (brand of hydroxychloroquine), trademarks reg. U. S. Pat. Off.

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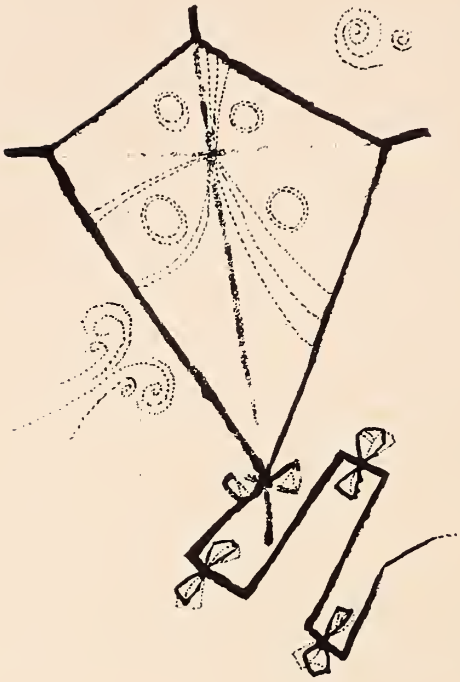

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new chemically improved penicillin which provides the highest blood levels that are obtainable with oral penicillin therapy

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With Chemipen it becomes possible as well as convenient for the physician to achieve and maintain higher blood levels—with greater speed—than those produced with comparable therapeutic doses of potassium penicillin V. In fact, Chemipen is shown to have a 2:1 superiority in producing peak blood levels over potassium penicillin V.*

Extreme solubility may contribute to the higher blood levels that are so notable with Chemipen.* Equally notable is the remarkable resistance to acid decomposition (Chemipen is stable at 37°C. at pH 2 to pH 3), which in turn makes possible the convenience of oral treatment.

And the economy for your patients will be of particular interest—Chemipen costs no more than comparable penicillin V preparations.

Dosage: Doses of 125 mg. (200,000 u.) or 250 mg. (400,000 u.), t.i.d., depending on the severity of the infection. The usual precautions must be carefully observed with Chemipen, as with all penicillins. Detailed information is available on request from the Professional Service Department.

Supply: Chemipen Tablets of 125 mg. (200,000 u.) and 250 mg. (400,000 u.), bottles of 24 tablets. Chemipen Syrup (cherry-mint flavored, nonalcoholic), 125 mg. per 5 cc., 60 cc. bottles.

*Knudsen, E. T., and Rolinson, G. N.: Lancet 2:1105 (Dec. 19) 1959.

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sulfa therapy suited
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Employs the N^1 acetyl form of KYNEX to impart high palatability yet retain single-daily-dose effectiveness and rapid, high sustained action against sulfa-susceptible infections. **Dosage:** first day, 1 tsp. (250 mg) for each 20 lbs.; thereafter, ½ tsp. daily for each 20 lbs. For 80 lbs., use adult dosage of 4 tsp. (1.0 Gm.) initially; and 2 tsp. (0.5 Gm.) thereafter. Taken once a day—preferably after a meal. **Supplied:** Each tsp. (5 cc.) contains 250 mg. sulfamethoxypyridazine activity. Bottles of 4 and 16 fl. oz.

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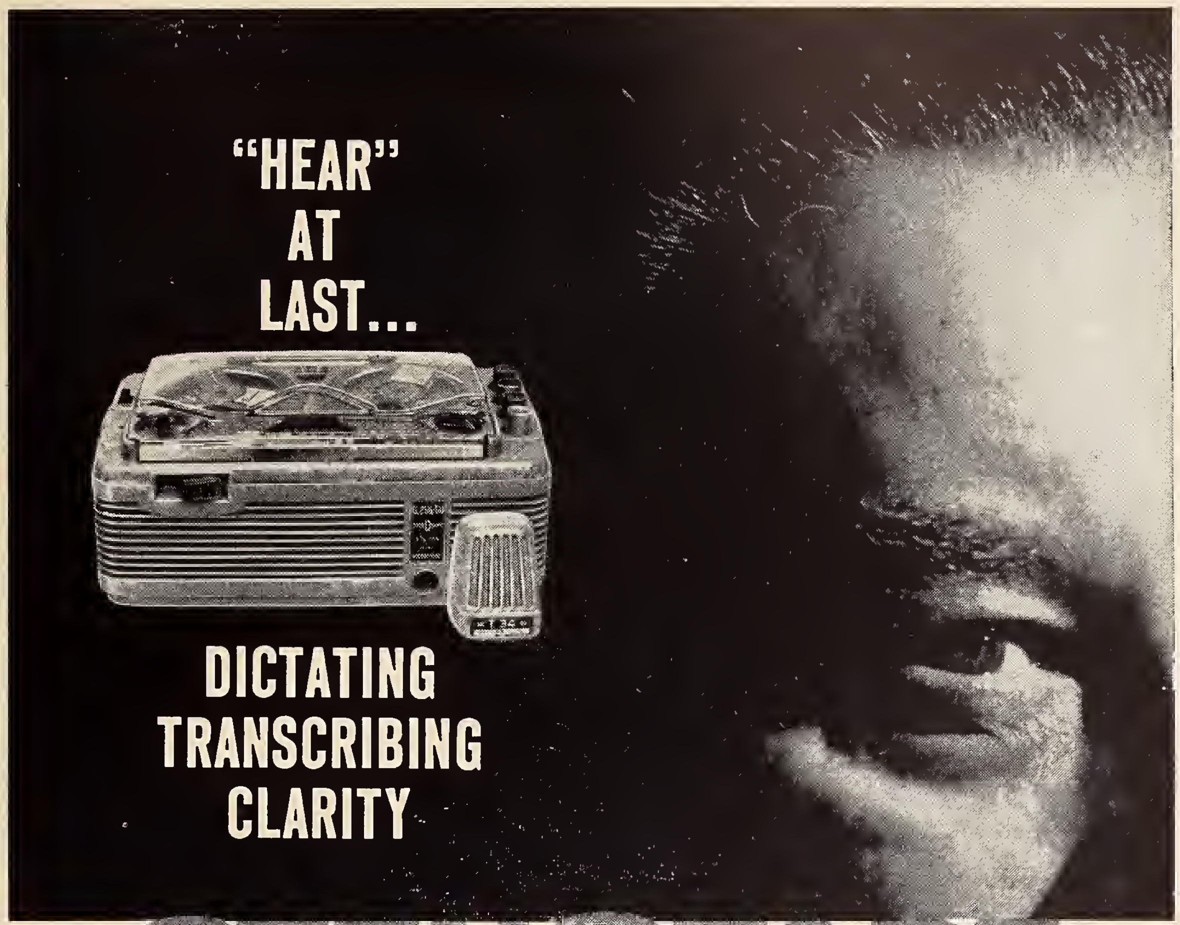

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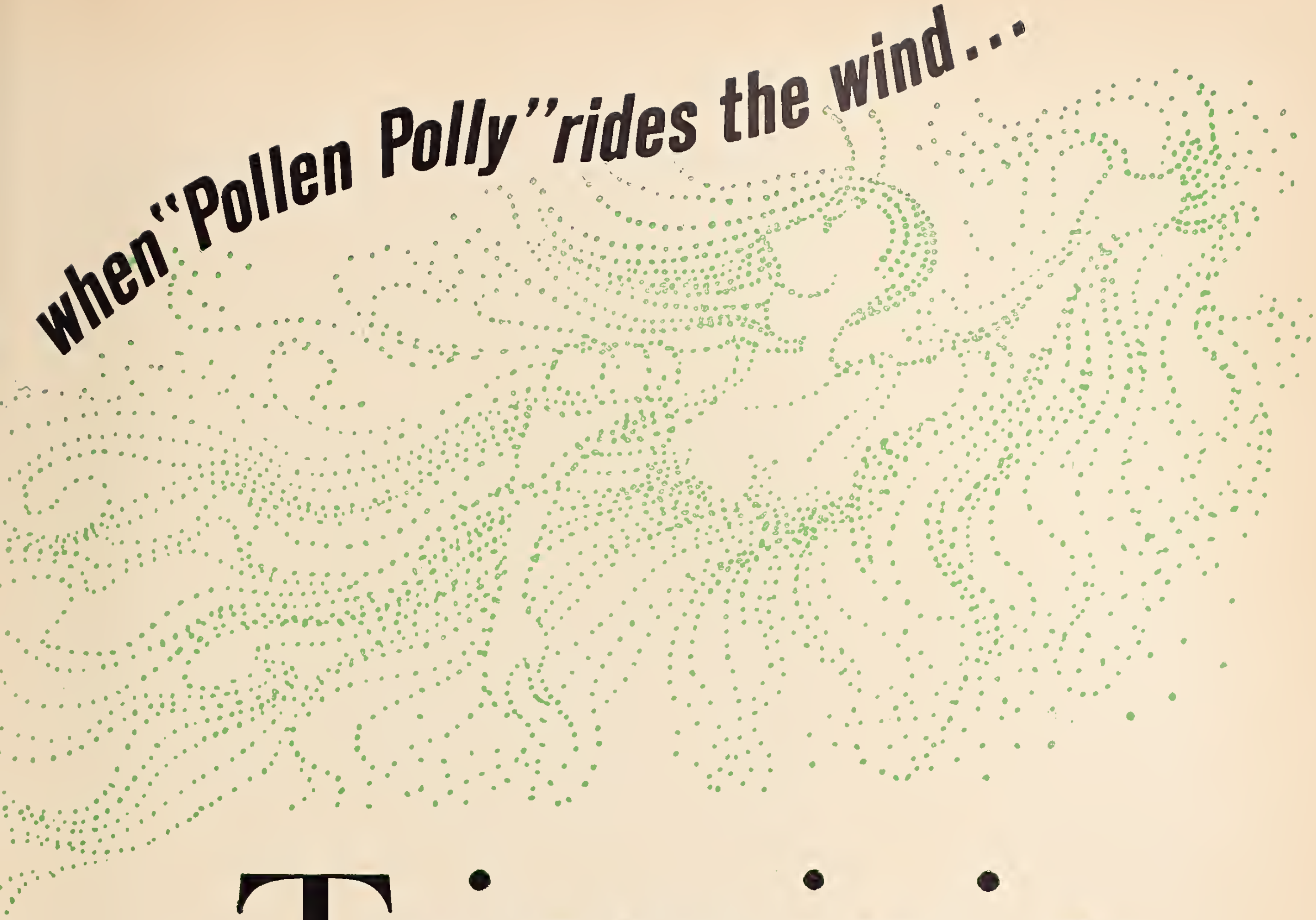
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The miseries of respiratory allergy can be relieved so effectively with Triaminic.[1-5] Triaminic contains two antihistamines plus the decongestant, phenylpropanolamine, to help shrink the engorged capillaries, reduce congestion and bring relief from rhinorrhea and sinusitis.[1] Oral administration distributes medication to *all* respiratory membranes without risk of "nose drop addiction" or rebound congestion.[2,3]

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Phenylpropanolamine HCl	50 mg
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also available:

TRIAMINIC JUVELETS® ½ the formulation of the Triaminic Tablet with timed-release action.

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References: 1. Fabricant, N. D.: E. E. N. T Monthly 37:460 (July) 1958. 2. Lhotka, F. M.: Illinois M. J. 112:259 (Dec.) 1957. 3. Farmer, D. F.: Clin. Med. 5:1183 (Sept.) 1958. 4. Fuchs, M.; Bodi, T.; Mallen, S. R.; Hernando, L., and Moyer, J. H.: Antibiotic Med. & Clin. Ther. 7:37 (Jan.) 1960. 5. Halpern, S. R., and Rabinowitz, H.: Ann. Allergy 18:36 (Jan.) 1960.

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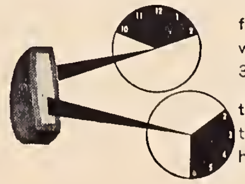

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Sterazolidin®
brand of prednisone-phenylbutazone

The combined action of phenylbutazone and prednisone in Sterazolidin results in striking therapeutic benefit with only moderate dosage of both active agents.

In long-term therapy of the major forms of arthritis, control is generally maintained indefinitely with stable uniform dosage safely below that likely to produce significant hypercortisonism.

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Sterazolidin®, brand of prednisone-phenylbutazone: Each capsule contains prednisone, 1.25 mg.; Butazolidin® (brand of phenylbutazone), 50 mg.; dried aluminum hydroxide gel, 100 mg.; magnesium trisilicate, 150 mg.; homatropine methylbromide, 1.25 mg. Bottles of 100.

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a well balanced therapy in all forms of rheumatic disorder
for rapid, effective relief

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In Lanesta Gel 7-*chloro-4-indanol,* a new, effective, nonirritating, nonallergenic spermicide, produces immediate immobilization of spermatozoa in dilution of up to 1:4,000. The addition of 10 per cent NaCl in ionic form greatly accelerates spermicidal action. Ricinoleic acid facilitates rapid inactivation and immobilization of spermatozoa and sodium lauryl sulfate acts as a dispersing agent and spermicidal detergent.

Lanesta Gel with a diaphragm provides one of the most effective means of conception control. However, whether used with or without a diaphragm, the patient and you, doctor, can be certain that Lanesta Gel provides faster spermicidal action — plus essential diffusion and retention of the spermicidal agents in a position where they can act upon the spermatozoa.

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Supplied: Lanesta Exquiset® . . . with diaphragm of prescribed size and type; universal introducer; Lanesta Gel, 3 oz. tube, with easy clean applicator, in an attractive purse. Lanesta Gel, 3 oz. tube with applicator; 3 oz. refill tube — available at all pharmacies.

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Some strains of staphylococci resistant to other penicillins exhibit in vitro sensitivity to potassium phenethicillin.

ALPEN has greater freedom from the G. I. sequelae (overgrowth of resistant flora) sometimes observed with broad spectrum -mycins.

ALPEN gives much higher antibiotic levels within the first hour of ingestion by the well-tolerated oral route.

WHEN TO USE ALPEN Recommended in the treatment of infections caused by pneumococci, streptococci, gonococci, corynebacteria, and penicillin-sensitive staphylococci.

HOW TO USE ALPEN Depending on the severity of the infection, 125 mg. (200,000 units) or 250 mg. (400,000 units) three times daily may be used. In more severe or stubborn infections, a dosage of 500 mg. (800,000 units) t.i.d. may be employed. In beta hemolytic streptococcal infections, treatment should be continued for at least ten days.

PRECAUTIONS The usual precautions in the administration of oral penicillin should be observed. For further details see package literature.

Tablets: 125 mg. and 250 mg., bottles of 25 and 100. Powder for Oral Solution (lemon-lime flavored), 1.5 Gm. bottle (125 mg. per 5 cc. teaspoonful).

this is the tablet that gives higher peak antibiotic blood levels

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***SANTA ROSA, CALIFORNIA**
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The Flamingo Hotel

***KANSAS CITY, KANSAS**
Friday, September 23, 1960
Battenfeld Memorial
Auditorium

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Saturday, September 24, 1960
The Shamrock Hilton Hotel

DEFIANCE, OHIO
Wed., September 28, 1960
Defiance College

PHILADELPHIA, PENN.
Sunday, October 16, 1960
The Sheraton Hotel

***HARTFORD, CONNECTICUT**
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The Statler Hotel

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ROCHESTER, NEW YORK
Wednesday, October 26, 1960
The Manger Hotel

CHARLESTON, WEST VIRGINIA
Sunday, October 30, 1960
The Daniel Boone Hotel

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Tuesday, November 1, 1960
The Sheraton-Cataract Hotel

***CHARLOTTE, N. CAROLINA**
Thursday, November 3, 1960
The Hotel Charlotte

***CLEVELAND, OHIO**
Wednesday, November 9, 1960
Pick Carter Hotel

***SOUTH BEND, INDIANA**
Friday, November 18, 1960
The Pick-Oliver Hotel

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of
musculoskeletal
disorders

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Lichtman[1,2] used Trancopal to treat patients with low back pain, stiff neck, bursitis, rheumatoid arthritis, osteoarthritis, trauma and postoperative muscle spasm. He noted that Trancopal brought satisfactory relief to 817 of 879 patients (excellent in 268, good in 448, fair in 101). "Chlormethazanone [Trancopal] not only relieved painful muscle spasm, but allowed the patients to resume their normal activities with no interference in performance of either manual or intellectual tasks."[1]

Gruenberg[3] also prescribed Trancopal for 70 patients with low back pain and observed that it brought marked improvement to all of them. "In addition to relieving spasm and pain, with subsequent improvement in movement and function, Trancopal reduced restlessness and irritability in a number of patients."[3] In another series of 193 patients Kearney[4] obtained relief with Trancopal in 181 patients suffering from low back pain and other forms of musculoskeletal spasm.

Trancopal enables the anxious patient to work or play. According to Gruenberg, "In addition to relieving muscle spasm in a variety of musculoskeletal and neurologic conditions, Trancopal also exerts a marked tranquilizing action in anxiety and tension states."[3] Lichtman[1] found that his patients in anxiety and tension states ". . . were in many instances able to continue their normal activities where previously they had been considerably restricted in their activities."[1] ". . . Trancopal is the most effective oral skeletal muscle relaxant and mild tranquilizer currently available." (Kearney)[4]

Side effects are rare and mild. "Trancopal is exceptionally safe for clinical use."[3] In the 70 patients with low back pain treated by Gruenberg,[3] the only side effect noted was a mild nausea which occurred in 2 patients. In Lichtman's group, "No patient discontinued chlormethazanone [Trancopal] because of intolerance."[1]

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References: 1. Lichtman, A. L.: *Kentucky Acad. Gen. Pract. J.* 4:28, Oct., 1958 • 2. Lichtman, A. L.: Scientific Exhibit, Internat. Coll. Surgeons, Jan. 4-7, 1959, Miami Beach, Fla. • 3. Gruenberg, F.: *Current Therap. Res.* 2:1, Jan., 1960 • 4. Kearney, R. D.: *Current Therap. Res.* 2:127, April, 1960 • 5. Collective Study, Department of Medical Research, Winthrop Laboratories.

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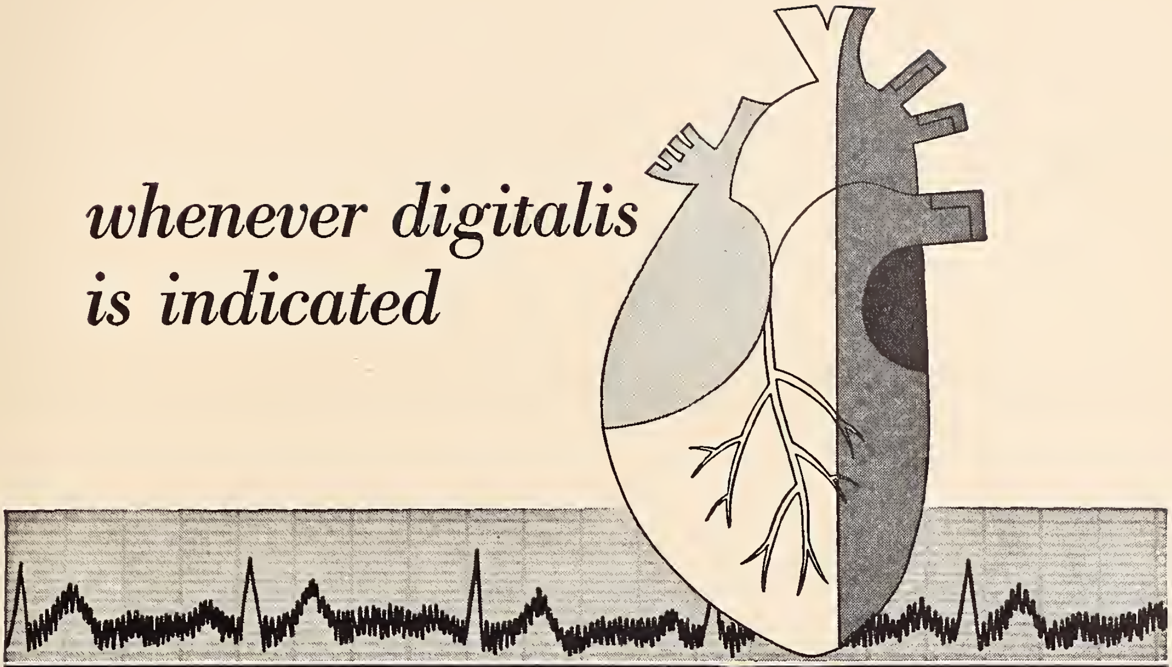

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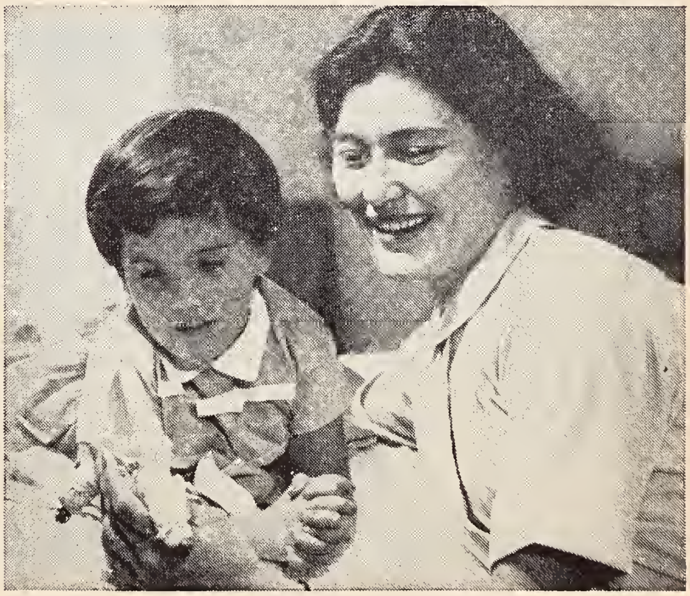

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11. Laughlin, H. P.: The Neuroses in Clinical Practice, Saunders, Philadelphia, 1956, pp. 448-481.

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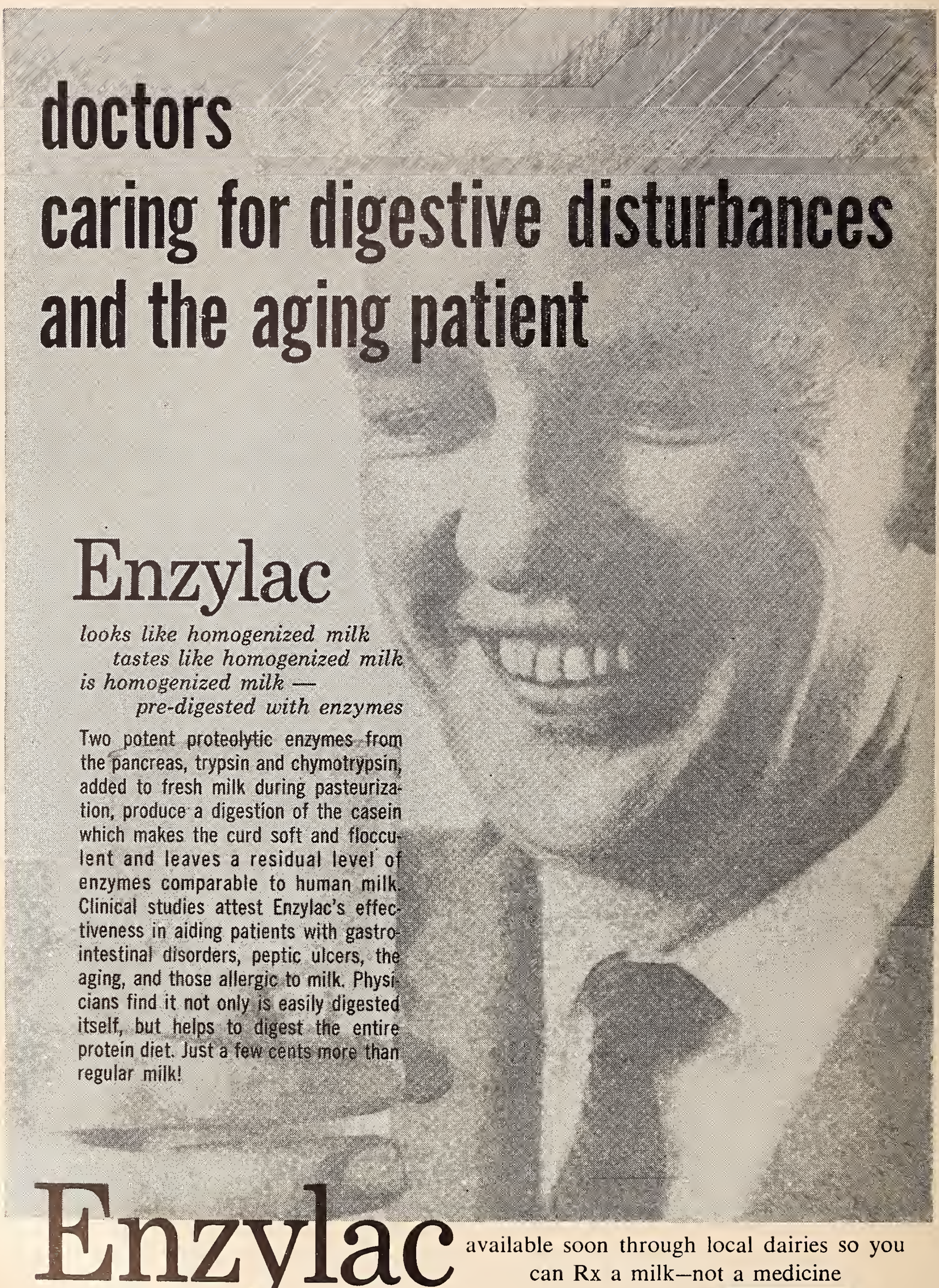
*Adams, L. D.: The Commonsense Book of Wine, New York, David McKay Company, Inc., 1958, pp. 162-163.



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1. Cook, J.E., Briggs, G.W., and Hindley, F.W.: Chronic Amebiasis and the Need for a Diagnostic Profile, Am. Pract. and Dig. of Treat. *6*:1821 (Dec., 1955).

2. Rinehart, R.E., and Marcus, H.: Incidence of Amebiasis in Healthy Individuals, Clinic Patients and Those with Rheumatoid Arthritis, Northwest Med., *54*:708 (July, 1955).

3. Webster, B.H.: Amebiasis, a Disease of Multiple Manifestations, Am. Pract. and Dig. of Treat. *9*:897 (June, 1958).

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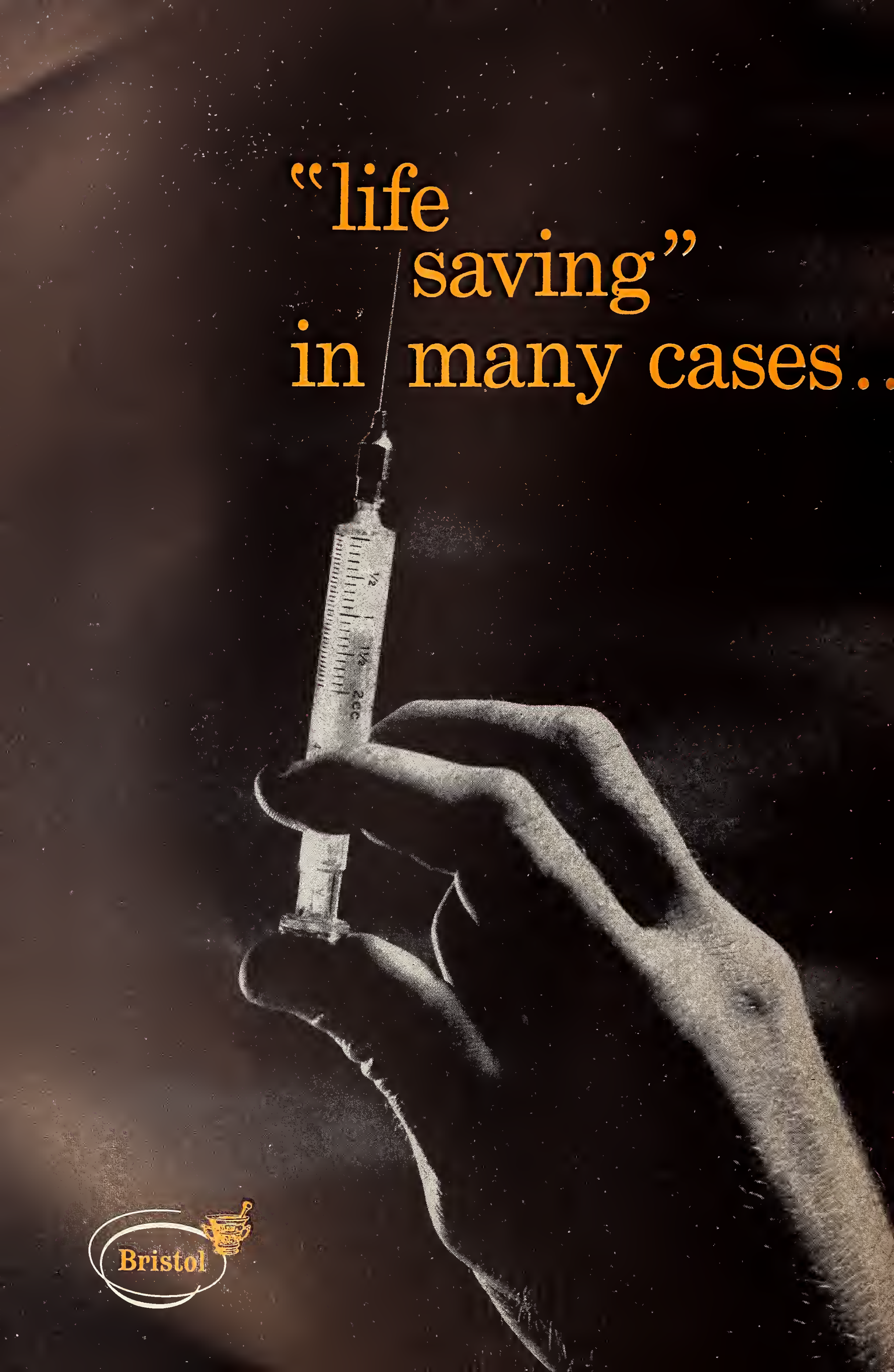
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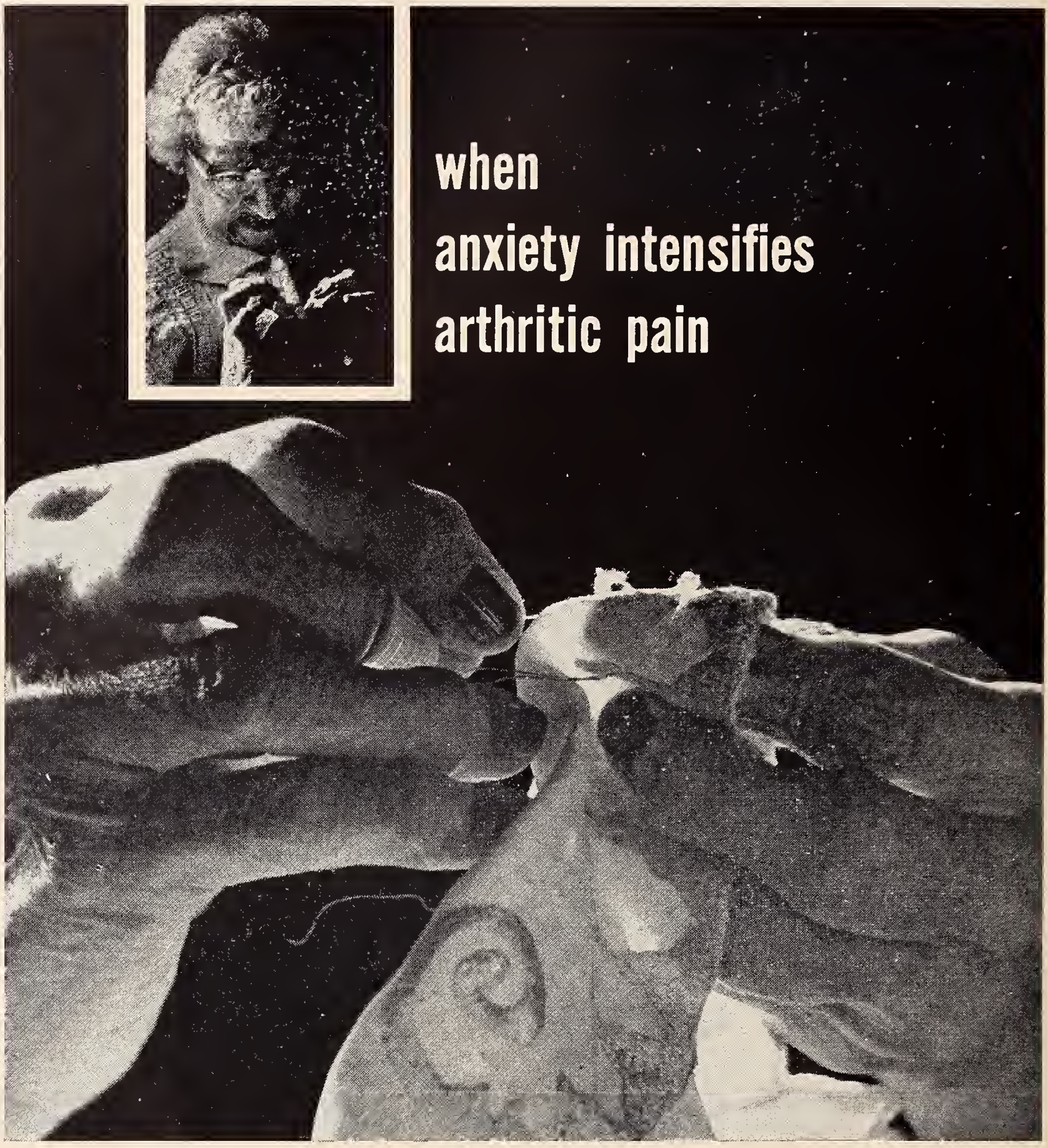

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Original Articles

ARIZONA MEDICINE

VOL. 17, NO. 6 JUNE, 1960

OVARIAN TUMORS

PRACTICAL CONSIDERATIONS*

Malcolm B. Dockerty, M.D.
Section of Surgical Pathology
Mayo Clinic and Mayo Foundation†
Rochester, Minnesota

FOR AN organ that normally contains only a few embryologically misplaced glandular structures in its hilar region, the ovary displays a confusingly complex spectrum of epithelial and connective-tissue neoplasms. Ovarian follicles and corpora lutea, which are normally small cystic structures found routinely at operation, may enlarge at times and give rise to symptoms and signs that require operative intervention. In this respect, they may mimic the more dangerous cystic and solid neoplasms. The ovaries provide extremely fertile soil for the settling out from lymphatic and blood vessels, as well as directly from the overlying peritoneum, of tumor cells originating in extraovarian locations. Metastatic ovarian tumors thus formed may mimic primary ovarian lesions. For the surgeon who has at hand facilities for histopathologic diagnosis by means of fresh frozen sections, the question of what treatment to employ for these various conditions is somewhat simplified. Without such facilities, thorough knowledge of gross characteristics is necessary on the part of the surgeon, who always should perform a careful examination of the lesion or lesions that he has removed before he closes the abdomen. The following observations may be useful to him.

Eighty per cent of ovarian tumors are cystic, and the majority of these are benign; 20 per cent of ovarian tumors are solid, and two-thirds of these are malignant. Of ovarian tumors occurring in women less than 30 years of age, 95 per cent are benign, and they are non-neoplastic in many instances. By contrast, any ovarian enlargement in a woman who has passed the menopause is likely to be of a serious nature. Table 1 lists the predominantly cystic ovarian lesions. A few remarks concerning the individual types may be helpful.

PHYSIOLOGIC CYSTIC OVARIAN LESIONS

The simple cysts, which are surgical problems only when they are large, are usually unilateral, unilocular, thin-walled and translucent. They never exhibit papillary excrescences. The luteal variety may reveal a yellowish lining. They may be treated by means of simple excision unless they are twisted and infarcted, in which event sacrifice of the involved ovary will be necessary.

---

*Read at the meeting of the Arizona Division of the American Cancer Society, Phoenix, Arizona, January 14 to 16, 1960.
†The Mayo Foundation, Rochester, Minnesota, is a part of the Graduate School of the University of Minnesota.

The type associated with hirsutism, infertility, hypertension and other features of the Stein-Leventhal syndrome is an exception; in such cases, both ovaries are symmetrically enlarged and have thick white fibrous capsules, underneath which lie clusters of small cortical cysts. Corpora lutea are not evident. Bilateral surgical resection of wedges from the ovary is reputed to cure this condition by interrupting the continuity of the fibrous cortical rind, which is a barrier to ovulation. Among older women with the Stein-Leventhal syndrome, dilation and curettage is especially indicated, since there is a high incidence of associated endometrial carcinoma.

NEOPLASTIC OVARIAN CYSTS

Cystadenomas are neoplastic cysts lined by columnar epithelium. They include serous and mucinous subtypes. Both types are larger than simple cysts, and the mucinous variety of lesions have a pronounced tendency to be multilocular. Cystadenomas should be removed intact, because the mucoid contents of the latter type are irritating to the peritoneum and because both types may harbor foci of early papillary carcinoma in their interiors. Serous cystadenoma may be associated with white fibrous warty excrescences that lead to confusion with papillary carcinoma unless the existence of the papillary subtype is recognized. Papillary features in a mucinous tumor always indicate malignant transformation.

Endometriomas are perforating tarry cysts that are bilateral in 80 per cent of cases and are often adherent to surrounding structures. Punctate, bluish-black nodules nearly always occur on the adjacent peritoneum, especially in the region of the cul-de-sac. Destruction of the ovary by the endometriotic process may be much more extensive than casual inspection of the involved ovaries would indicate, and the success of "conservative" ovarian resection in the surgical treatment sometimes depends on knowledge of this fact. Carcinomatous change in this heterotopic endometrial tissue is a serious late complication that has been recognized only recently.

The presence of bones and teeth in addition to a surprising degree of radiolucency may lead to the preoperative roentgenologic diagnosis of an ovarian dermoid. At laparotomy, the yellow color of the thick leathery capsule, combined with a doughy feeling, often indicates the correct diagnosis. The oily contents of dermoids are extremely irritating to the peritoneum; accordingly, every effort should be made to deliver such lesions from the abdomen in an unruptured state. Fortunately, it is usually easy to accomplish this, because dermoids seldom are extremely large and because they are lined by skin that is rich in fibrous and elastic tissue. Whereas the vast majority of testicular teratomas are malignant, almost 98 per cent of their ovarian counterparts belong in the benign, or "dermoid," category.

Overgrowth of any one of the numerous types of tissue in ovarian dermoids may give rise to such interesting entities as strumal tumors (with their 90 per cent incidence of associated ascites), carcinoid tumors, squamous cell carcinomas, gliomas and, more rarely, malignant melanomas.

Dermoids are bilateral in 10 per cent of cases, and the experience of "striking oil" through an aspirating needle introduced into a seemingly normal contralateral ovary can be a rewarding experience for the careful surgeon. Small or even medium-sized dermoids can be dissected free without interfering with the function of residual ovarian tissue.

Cystic ovarian carcinomas are, for the most part, malignant "opposite numbers" of serous and mucinous cystadenomas or, more rarely, of endometriomas and dermoids. Bilateral in about a third of cases, they are frequently papillary. Extensive mucous cystadenocarcinomas are prone to produce the condition known as "jelly belly," which frequently leads to death from intestinal obstruction. Unruptured cystadenocarcinomas are curable in perhaps 50 to 60 per cent of cases after radical pelvic surgical treatment. Serous cystadenocarcinoma, when well differentiated, displays intracystic and extracystic papillary excrescences that become implanted on the peritoneum and omentum in the form of delicate noninfiltrating frondlike projections. These low-grade neoplasms appear to be dependent on hormones, and extirpation of all ovarian tissue has an inhibitory effect on the implants. Some degree of radiosensitivity is likewise apparent, and postoperative roentgen therapy causes further regression of the secondary lesions and reduction in troublesome accumulations of ascitic fluid.

In the more undifferentiated examples of serous and mucinous cystadenocarcinomas, papillary excrescences are replaced by necrotic solid masses of tissue in the primary growth and solid

TABLE 1

CLASSIFICATION AND INCIDENCE OF CYSTIC OVARIAN TUMORS*

Lesions	*Incidence, per cent*	*Bilateral, per cent*
Physiologic Nonsurgical except when large		
Follicular cysts	10	Rare
Luteal cysts	5	Rare
Compound luteal cysts	Rare	50
Corpus albicans cysts	Rare	Rare
Neoplastic		
Serous cystadenomas		
Type "ordinaire"	10	25
Fibrous papillary type	2	25
Mucinous cystadenomas	8	20
Endometriomas	27	70
Cystic teratomas (dermoid, etc.)	8	10
Cystadenocarcinomas	30	50
Serous, mucinous, endometrial, others		

*Based on a series of 2500 ovarian tumors, 2000 of which were cystic (80 per cent).

"caking" of the omentum. Few indeed are the miracles that can be performed by radical removal of these lesions. In such cases, metastatic tumors in the fallopian tubes and endometrium often are present.

SOLID OVARIAN TUMORS

Table 2 lists some of the commoner solid tumors of the ovary. When observed at laparotomy, such lesions are usually malignant; if bilateral involvement is evident, a careful search

TABLE 2

CLASSIFICATION AND INCIDENCE OF SOLID OVARIAN TUMORS*

Lesions		*Incidence, per cent*
Functioning neoplasms		15
Granulosa cell tumors		10
Theca cell tumors	Feminizing	2
Sertoli cell tumors		Rare
Arrhenoblastomas	Masculinizing	1
Adrenal-like carcinomas		Rare
Leydig cell tumors		Rare
Dysgerminomas	"Neutralizing"	2
Nonfunctioning neoplasms		85
Fibromas		30
Brenner's tumors		3
Mesotheliomas		Rare
Adenofibromas		3
Adenocarcinomas		35
Serous, mucinous, endometrial, mesonephromatous, others		3
Teratomas		3
Sarcomas		1
Metastatic (Krukenberg type)		2
Metastatic (other types)		8

*Based on a series of 2500 ovarian tumors, 500 of which were solid (20 per cent.)

must be made to rule out the possibility that the neoplasms are metastatic.

Fibroma, one of the commoner benign solid tumors, may be distinguished grossly by its smooth capsule and its peculiar white color. Prone to twist on their pedicles, these tumors, when sizable, frequently are associated with ascites and sometimes with hydrothorax. Increasing awareness of Meigs' syndrome on the part of clinicians and surgeons has dispelled the older notion that ascites and hydrothorax in a woman with a pelvic tumor invariably indicated malignancy. Fibromas almost always remain benign, despite a worrisome degree of cellularity when they are examined microscopically.

The surgeon usually will make a diagnosis of fibroma on the first few examples of Brenner's tumor that he encounters. This mistake is not serious, because the Brenner tumor, like fibromas, is almost always benign. The pathologist may fall into the error of mistaking for metastatic carcinoma the benign nests of squamous-like cells that characterize this exotic lesion, but since a primary is never found, the patient should not experience any ill consequences, particularly if she is not made aware of the diagnostic problem.

Primary solid carcinomas of the ovary are often cystadenomas that, undergoing malignant change, have proliferated to the extent of obliterating their original cysts of origin. Others are active malignant endometriomas that sometimes display microscopic mixtures of squamous cells and adenomatous cells (adeno-acanthomas). Still others represent malignant forms, pure or mixed, of complex teratomas that are behaving like their testicular counterparts. From the realm of pathologic curiosities appear the hypernephroid carcinomas and the mesonephromas. A sizable residue of solid tumors defy classification because they are so anaplastic. As compared with cystic ovarian carcinomas, these solid growths generally are rapidly growing tumors associated with an extremely bad prognosis.

Functioning Solid Ovarian Tumors

No consideration of ovarian tumors would be complete without reference to a small group of neoplasms that induce physiologic alterations in their hosts. The term "functioning" has been applied to such lesions. Granulosa cell and theca cell tumors share a common origin from the cortical ovarian mesenchyme and sometimes are grouped together under the term "feminizing mesenchymoma." When, as happens occasionally, they affect children, such tumors induce precocious puberty, with menstrual-like bleeding. When they occur between puberty and the menopause, they give rise in most instances to amenorrhea. In older patients, semiperiodic vaginal bleeding of a menstrual-like character is observed. Uterine myohypertrophy, uterine fibroids and thick proliferative endometrium are taken as measures of estrogenic production by the tumors. Endometrial and mammary carcinomas develop in some of the older patients affected by these tumors. The ovarian tumors themselves are unilateral and solid. Theca cell neoplasms are characteristically yellow and have the fibrous consistency of fibromas; the granulosa cell tumors are brownish and of a consistency likened to that of liver sausage. Theca cell tumors are composed of spindle cells, whereas granulosa cell growths, as the name implies, feature small round cells, often disposed in rosettes (Call-Exner bodies). Occasionally, and especially in older patients, these tumors behave aggressively.

Arrhenoblastomas supposedly arise from male-directed elements (testicular tubules and Leydig's cells), which frequently occur in the hilar regions of otherwise normal ovaries. A teratomatous origin has been claimed by some investigators. Tumors of this type, which cause clinical masculinization, usually exhibit large numbers of Leydig's cells, with many of the Sertoli elements forming a primitive spindle cell matrix that in some areas is oriented about the lumina of tubules. With a preponderance of Sertoli's cells, tubules are numerous and well formed, and these tumors may be feminizing or the hormonal summation may be a "neutral" one. On rare occasions, the tumor may be composed entirely of Leydig's cells, and the patient may be thoroughly masculinized. The rate of recurrence among these tumors is discouragingly high.

The rare masculinovoblastoma is a neoplasm arising from heterotopic adrenal cortical tissue and producing a clinical picture like that of Cushing's syndrome. Grossly and microscopically, these tumors resemble their adrenal cortical counterparts; about 50 per cent of them prove fatal as a result of recurrence and metastasis.

The ovarian dysgerminoma may be classified as a neutralizing tumor. It is exactly similar to a testicular seminoma and is the commonest gonadal tumor affecting pseudohermaphrodites.

However, its removal does not alter the pre-existing sexual habitus of the patient, and it may occur during the distinctly "unneutral" state of pregnancy. Dysgerminoma is a primitive gonadocytoma.

The achievement of occasional successful cures by local removal of these highly anaplastic neoplasms unfortunately has dictated an unrealistic approach to their treatment. About one third of the dysgerminomas are bilateral, and the recurrence rate is extremely high in long-term, follow-up studies. Fortunately, dysgerminomas and their recurrent and metastatic nodal deposits are extremely radiosensitive, and near miracles may be achieved therapeutically in seemingly hopeless cases if this important fact is kept in mind. Dysgerminomas occasionally exhibit admixtures with complex teratomatous elements, and such a microscopic combination bodes ill for the patient.

Metastatic Ovarian Carcinomas

Finally, mention should be made of metastatic ovarian carcinomas, which comprise at least 10 per cent of any sizable surgical series of solid ovarian tumors. They are frequently mistaken for primary growths. In general, such tumors represent either retrograde metastatic deposits or localized evidence of a seeding process that eventuates in peritoneal carcinomatosis. Carcinoma, rather than sarcoma, is the underlying lesion in more than 90 per cent of the cases. An important surgical clue to the diagnosis lies in the finding of bilateral solid ovarian neoplasms, although a fairly large number of such lesions grossly appear to be unilateral. The uterus, breast, sigmoid, pancreas and stomach provide the bulk of the primary sites, but metastatic ileal carcinoids, lymphomas of the retroperitoneum, malignant melanomas and even fibrosarcomas have been encountered.

Because of the tendency of these solid tumors to twist on their pedicles and become infarcted or to produce large quantities of ascitic fluid, their removal is indicated even though the procedure is strictly palliative.

HEALTH INSURANCE BENEFITS DOUBLE IN FIVE YEARS

American families received about $3.1 billion in benefits under voluntary health insurance duirng a 12-month period in 1957-58, Health Information Foundation reported — more than double the amount for a similar period five years earlier.

The average insured family in 1957-58 had $80 in benefits from voluntary health plans. This is an increase of 78 per cent over the $45 reported in a comparable survey for 1952-53.

Insurance benefits now pay for 24 per cent of the average insured family's total bill for hospital, medical, dental, and other health services, the H.I.F. report said. Five years earlier the figure was only 19 per cent.

One of the most significant findings of the survey, commented George Bugbee, Foundation President, is that families with unusually heavy costs for health care have been helped the most by recent increases in insurance benefits.

For example, families with health costs of $1,000 and over averaged $572 in benefits for 1957-58 against only $362 in 1952-53. Families spending between $750 and $1,000 in 1957-58 received $257 in benefits, while comparable families in 1952-53 received only $204.

(H.I.F. REPORTS)

HEMOPHOBIA

by

Philip F. Swigart*

WIRE services of the Associated Press recently carried this item: "Cape Carnivera, Africa, November 17 — Jungle drums today beat out a tragic prelude to the arrival of civilization in this last of Africa's primitive tribal communities. It was a grim story of filicide, perpetrated by the parents of a 14-year-old boy-victim of hemophobia.

"Tribal medicine men, attending the boy in a local hospital, had prescribed whole blood (human) to be taken orally, which is the only known jungle remedy for this otherwise fatal malady. But the boy's parents refused to consent to the treatment, objecting that it would be a form of cannibalism.

"Although the first doses of blood were administered yesterday after a tribal court order had been obtained, placing the patient under the temporary custody of the community, the boy died early this morning."

The preceding paragraphs are a parody on an actual item reported by the Associated Press: "Ann Arbor, Michigan, November 17 — A 14-year-old boy died last night, two days after receiving a blood transfusion over the objections of his parents, who said it violated the family's religious beliefs. Etc., etc."

From time to time, similar incidents have been reported by the press. And there are bound to be more of them, as long as religious sects continue to propagate anti-transfusion beliefs.

People who do not share such beliefs find it hard to keep from asking, "Must we stand by, powerless to act, while human life is so needlessly sacrificed?" But difficult as it may be to avoid this question, it is even more difficult to find a completely satisfactory answer.

Too many separate issues are involved. Ethically, there is the question of where the physician's responsibility for the well-being of his patient ends, or whether the physician's responsibility may ever supersede that of the patient, and if so, under what specific circumstances and by what means. Philosophically, there is the question of how far one may go in opposing measures to save his own life before he becomes guilty of willful self-destruction — or, in the case of another's life, guilty of murder. And if opposition to a certain life-saving measure is a matter of conscience, would a violated conscience be worse than suicide or murder? Politically, there is the matter of the individual's constitutional liberty to hold whatever religious beliefs he may choose for himself. Can society with impunity place temporary restraints on this freedom by obtaining court orders to set aside certain beliefs?

Important as all these issues are, however, the problem, as defined by those who conscientiously object to blood transfusions, is basically a religious one. And, since they object on the basis of certain beliefs which are alleged to be drawn from the Holy Bible, the issue to be resolved is essentially a theological one.

Unfortunately, the Bible and so-called Biblical theology are not necessarily always identical. There are almost as many divergent Biblical beliefs as there are Bible students. And each seems curiously able to quote the same Scripture in support of his own peculiar belief.

There is no limit to what the Bible may be made to prove. For example, one zealous preacher, speaking before a convention of hairdressers, was eager to prove that the popular, casual coiffures enjoy Scriptural sanction. He referred to Matthew 24:17, quoting the words: "Top not (topknot) shall come down." Another once addressed a gathering of newspaper editors and based his remarks on the 'journalist's text,' Mark 2:4, "They could not come nigh unto him for the press."

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*Director, Southwest Blood Bank of Little Rock, Arkansas.

The following are some of the Biblical passages which are quoted by those who object to blood transfusions on religious grounds: Genesis 9:3-4, "Every moving thing that liveth shall be meat for you; even as the green herb have I given you all things. But flesh with the life thereof, which is the blood thereof, shall ye not eat." Leviticus 17:11-12, "For the life of the flesh is in the blood; and I have given it to you upon the altar to make an atonement for your souls: for it is the blood that maketh an atonement for the soul. Therefore I said unto the children of Israel, No one of you shall eat blood, neither shall any stranger that sojourneth among you eat blood." Deuteronomy 12:16, "Only ye shall not eat the blood; ye shall pour it on the earth as water." Acts 15:29, "That he abstain from meats offered to idols and from blood and from things strangled: from which, if ye keep yourselves, ye shall do well."

From these and similar statements of the Bible it has been deduced that blood is sacred; that blood dare not be eaten; that blood transfusions are a form of intravenous feeding and, hence, a manner of eating blood; and that blood transfusions are therefore prohibited by God.

This anti-transfusion belief contains both logical and theological flaws. But it would be a serious mistake to assume that mere logic and theology will be sufficient to dispel the hemophobia of people who have already subscribed to this belief. It simply is not the nature of religious conviction that it be frankly open to the possibility of counter-conviction.

Professed beliefs, however, are not always as genuine and deep-rooted as they may appear to be. Severe tests of faith not only reveal the heroes and expose the hypocrites, but they also produce defections. And defection can be a two-way street — not only from truth to the denial of it, which is always reprehensible, but also to truth from the denial of it, which is always wholesome and desirable, especially in the case of a patient who, on the basis of an untenable religious belief, would deny himself the blood transfusion he so desperately needs. For his sake, in order to be able to give him light when his own lamp flickers and fails, it is well to be conversant with the pertinent logical and theological facts.

1. The only point of similarity between intravenous feeding and the transfusion of blood is the intravenous aspect of both procedures. And neither one is in any respect the equivalent of eating. These are not questions of religion, but purely and simply a matter of semantics in reference to certain medical procedures and physiological functions.

2. Every Biblical prohibition against the eating of blood is in reference only to the blood of animals, specifically against the eating of the animal's flesh, if the blood had not been properly drained from it. There is not one Biblical reference to the tranfusion of human blood.

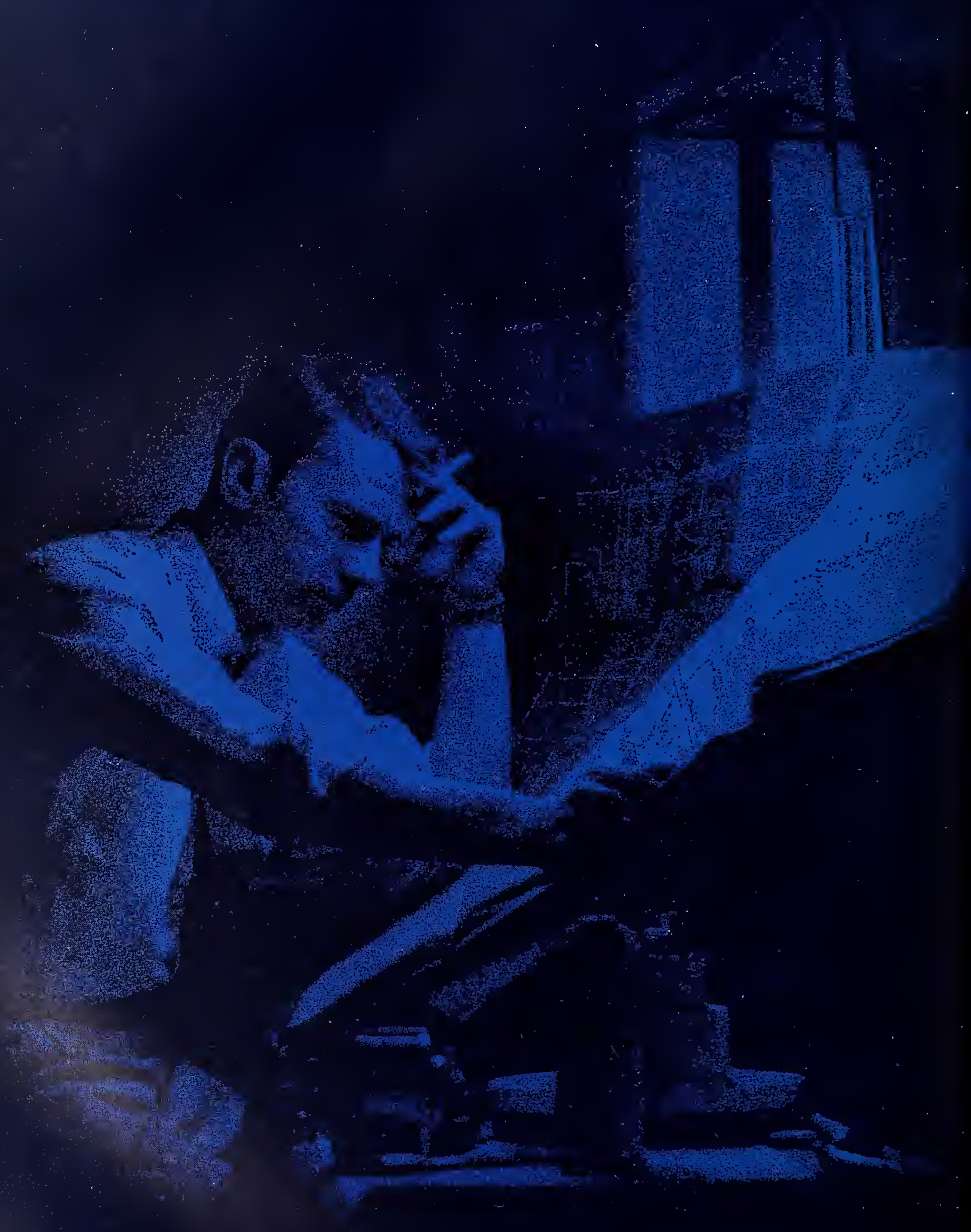
3. Consistent theology would require that adherence to the Biblical prohibition against blood would be accompanied by similar recognition of related prohibitions against animal fats and certain meats.

4. The divine purpose of the Biblical prohibition against eating blood is clearly stated in Leviticus 17:11-12, viz., that the blood of animals was designated to be used in the sacred rites associated with atonement, and therefore was not to be profaned by a common usage in eating.

5. The ceremonial laws (not moral laws) of the Old Testament, including also the prohibition against eating blood, were abrogated by Christ, Colossians 2:17-17, "Let no man therefore judge you in meat, or in drink, or in respect of an holy day, or of the new moon, or of the Sabbath days: which are a shadow of things to come; but the body is of Christ."

6. Judaism, still adhering to the precepts of the Old Testament, particularly in reference to abstaining from the eating of blood, does not condemn the medical practice of transfusing blood.

7. Using the strange 'logic' and 'theology' of the conscientious objectors to blood transfusions — that one's blood is his life and therefore sacred, and that it is wicked to transfuse one's blood into the veins of another for the purpose of sustaining his life — it would also be possible to 'prove' that the medical practice of transfusing blood not only has Biblical sanction, but is most highly commended by Christ, who said, "Greater love hath no man than this, that a man lay down his life for his friends," John 15:13.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CEREBRAL VASCULAR SURGERY*

PRINCIPLES OF TREATMENT

by

John R. Green, M.D., F.A.C.S.**

KNOWLEDGE about vascular diseases of the brain has evolved slowly.

HISTORICAL ASPECTS

Claudius Galen,(1) a Greek, who was born in Pergamum in 130 A.D. and physician to the Roman Emperor Marcus Aurelius, taught that *hemorrhage* in the brain disturbs the normal flow of animal spirits into the organs of motion and sensation resulting in hemiplegia and unconsciousness. Anatomically, the Galenic conception of the rete mirabile, transferred from the ungulate brain to man, and subserving the formation of animal spirits dominated medical thinking for the next 140 years. Even Vesalius's(2). Tabulae Sex, published in 1538 showed a diagramatic rete mirabile. Wepfer(3), in 1658 gave an excellent description of cerebral hemorrhage and described accurately the blood vessels at the base of the brain. Two decades later, Sir Thomas Willis(4) described what is now known as the circle of Willis. Ruysch,(5) in 1721, demonstrated the ubiquity of the vascular supply of the brain by arterial injection techniques. Splendid figures of the venous drainage of the brain had been provided earlier by Vesalius, in 1543, and by Highmore in 1651. Cerebral embolism and thrombosis were not known until the early part of the 19th century.

Aneurysm is mentioned in the works of Aetius(6) in the 6th century, and the term *arteriovenous aneurysm* is attributed to William Hunter (7) in the 18th century. Many descriptions, including careful neurological data, of aneurysms of the base of the skull and brain began to appear in the early part of the 19th century. Coe and Swayne(8) are believed to be the first to ligate the carotid artery in the neck for intracranial aneurysm with success in 1855. Because of failure of ligation of the carotid artery in the neck to cure a case of pulsating exophthalmos, Zeller(9) of Germany, in 1911 first attempted ligation of the internal carotid artery within the cranium but the patient died from hemorrhage when an assistant accidentally grasped the ligature with a hemostatic forceps and avulsed it. Hamby and Gardner(10) in 1933, unaware of this case, first successfully ligated the internal carotid intracranially with silk ligatures after ligation of the internal carotid in the neck, in a case of carotid cavernous fistula. Two years later, Dandy(11) reported the use of silver hemostatic clipping of the intracranial portion of the internal carotid artery. Following this development, intracranial aneurysms have been cured by clipping the neck of the sac or by clipping the afferent and efferent vessels.

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*Presented at the annual meeting of the Medical Society of the United States and Mexico, Valley Ho Hotel, Scottsdale, Arizona, December 4, 1959.

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Two more recent advances in techniques have added to the safety and accuracy of cerebral vascular surgery: (1) *Cerebral angiography,* introduced in 1927 by Egas Moniz(12) and perfected by many other workers, has gradually assumed a major role in the objective diagnosis and localization of vascular lesions of the brain. This procedure is indicated in almost all patients who have spontaneous subarachnoid hemorrhage, in all cases of pulsating exophthalmos, and in the majority of patients suspected of having cerebral thrombosis, in order to exclude such surgical conditions as aneurysm, neoplasms and other space-occupying lesions. Angiography, carotid and vertebral, can demonstrate all areas of the brain and is indicated as soon as the patient's condition warrants additional investigation to make an accurate diagnosis. (2) *Hypothermia* has been particularly useful in cerebral vascular surgery in that cerebral metabolism decreases directly with lowering of the temperature. Safe, monitored methods of hypothermia have recently been developed by Botterell and associates.(13) The technique allows the neurosurgeon to operate with the patient's temperature at 29° C., and to be able to temporarily occlude both carotids or any portion of them and the vertebrals for as long as fifteen minutes while the vascular malformation itself is being eradicated. Hypothermia, in the hands of an experienced team, is remarkably safe and free of complications for the patient.

CASE REPORTS

Three patients are briefly presented to illustrate representative clinical problems.

1. *Carotid-cavernous fistula.* A. R. sustained a basal skull fracture in December 1957 and subsequently developed proptosis of the right eye and a roaring sound synchronous with his heart beat in the same area. He was unable to abduct his right eyeball following the accident. Examination in July of 1958 revealed a normal 12 year old who had proptosis of the right eye, congestion of the veins surrounding the right eye with palpable thrill and audible bruit. He had a right abducens palsy. Pulsating exophthalmos was absent.

Right cartoid angiography on July 28, 1958 verified the clinical diagnosis of carotid-cavernous fistula. Left carotid and vertebral aniography were done to study collateral circulation and possible feeders to the fistula. It was determined that the right carotid artery was the only vessel contributing to the fistula.

In view of a negative Matas test (no clinical symptoms associated with carotid compression) and the fact that the thrill and bruit were temporarily eliminated with this test, the common carotid artery was ligated.

The bruit and thrill disappeared immediately and the proptosis decreased during the next month. During April of 1959, the preoperative symptoms and signs recurred and "trapping" of the carotid-cavernous fistula was decided upon.

On June 1, 1959, under hypothermia at 30° C., the right internal carotid artery was ligated in the neck and occluded with Olivecrona clips intracranially. This boy has made an uneventful recovery, is back in school and taking part in sports. (Figs. 1A and 2A show pre-operative angiograms; Figs. 1B and 2B show Olivecrona clips on internal carotid artery.)

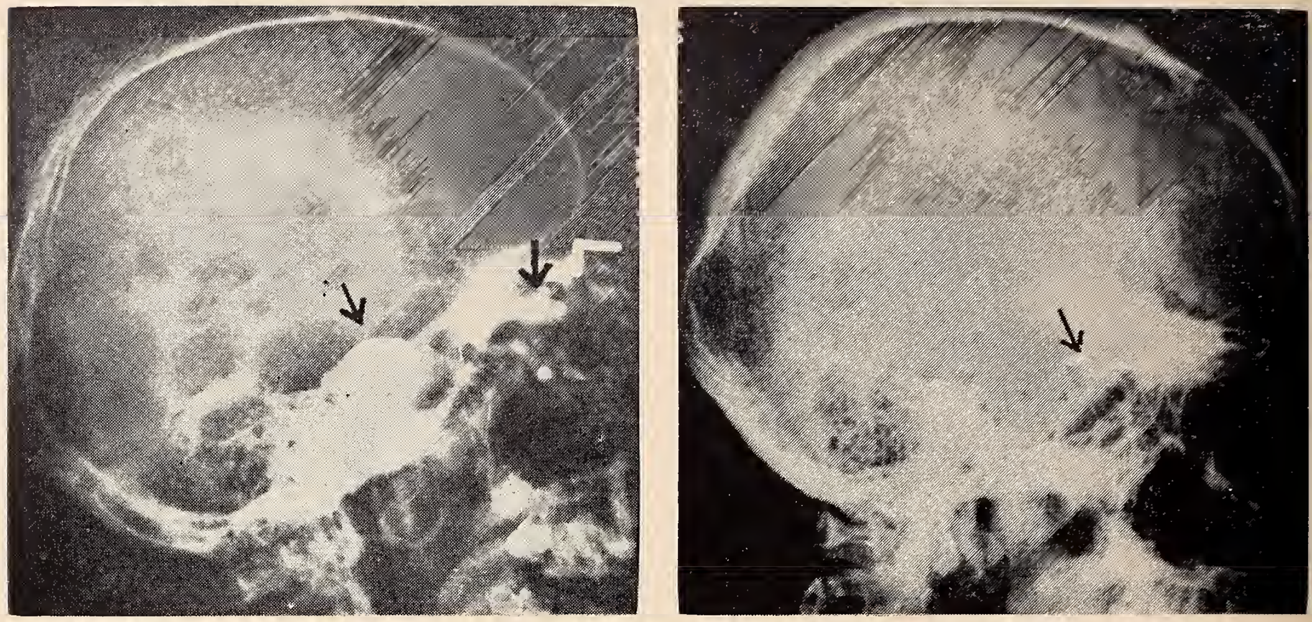
2. *Arterial-venous racemose aneurysm, left middle cerebral artery, with left temporal lobe hematoma.*

R. W. had two episodes of spontaneous subarachnoid hemorrhage late in December of 1958. Examination on January 6, 1959 revealed a lethargic, asphasic, 38 year old male, who had a slight right hemiparesis and left oculomotor palsy. His neck was stiff and the spinal fluid was bloody — its pressure being 380 mm. H_2O. History was obtained of a previous episode of similar symptoms in 1952, but a definite diagnosis was not established at that time.

Bilateral carotid angiography on January 6, 1959 disclosed a large arteriovenous aneurysm of the left middle cerebral artery which was displaced upward. The left anterior cerebral artery was displaced across the mid-line. The diagnosis listed above was made.

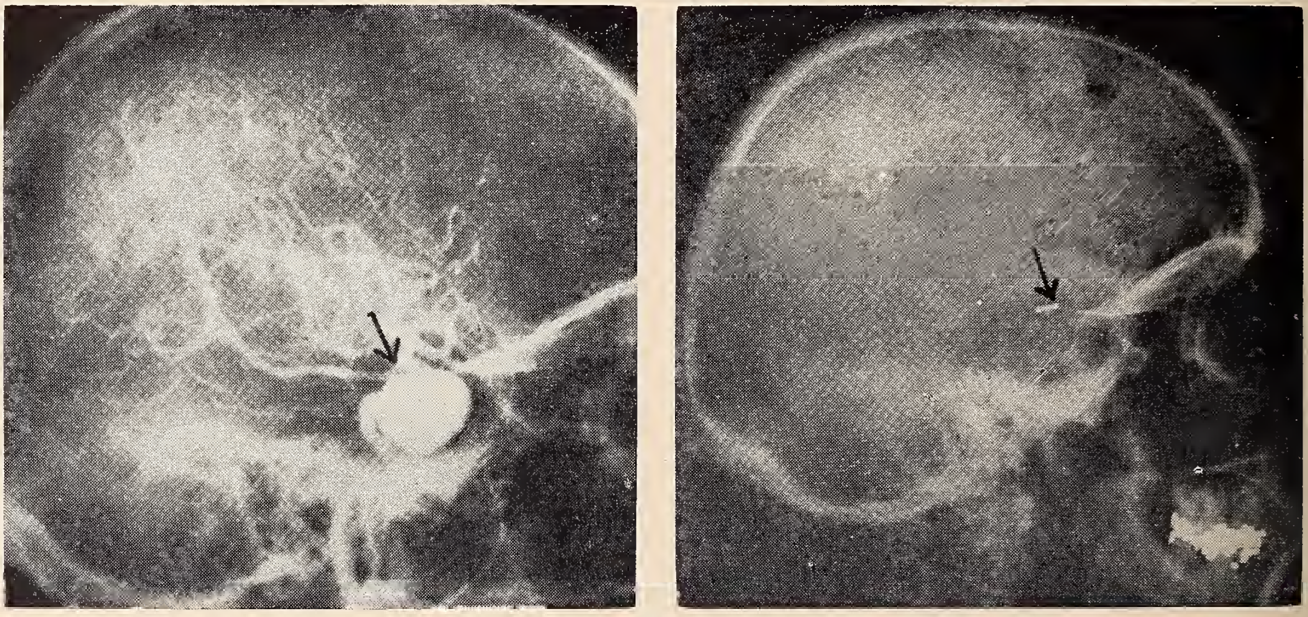
On January 8, 1959, under hypothermia to 89° F., and the usual monitoring by the Autotherm, cardiac monitor, and esophogeal and rectal thermometers, a large left temporal lobe hematoma was evacuated (4 ounces of fluid) and the arteriovenous racemose anurysm was excised from its contributing vessels. Tracheotomy was done to smooth the post-operative course.

He resumed his job in March of 1959 and has been well since. His only neurologic deficit as of November 15, 1959 was a partial right upper quadrant hemianopsia which does not interfere



A B

Fig. 1



A B

Fig. 2

with his normal activities.

3. *Saccular aneurysm of left internal carotid artery — intracranial portion.*

H. D. was referred by her psychiatrist because of a recent onset of giddy spells and blurring of vision superimposed upon a chronic severe anxiety state. On May 6, 1958, this 61 year old lady showed defects in the superior temporal quadrant of each visual field, and corrected visual acuities of 20/20 bilaterally. She showed no other signs other than an extreme anxiety state which was refractory to medications and psychiatry. She had two brief episodes of diplopia during August of 1958 but showed no extraocular muscle palsy. X-rays of the skull showed suggestive ballooning of the sella turcica.

Bilateral carotid angiography was done on August 21, 1958 showing a large saccular aneurysm on the infraclinoid portion of the left internal carotid artery just below the junction of the posterior cerebral artery.

Ligation of the left common carotid artery was done on August 26, 1959, after compression of this artery digitally for periods of time up to

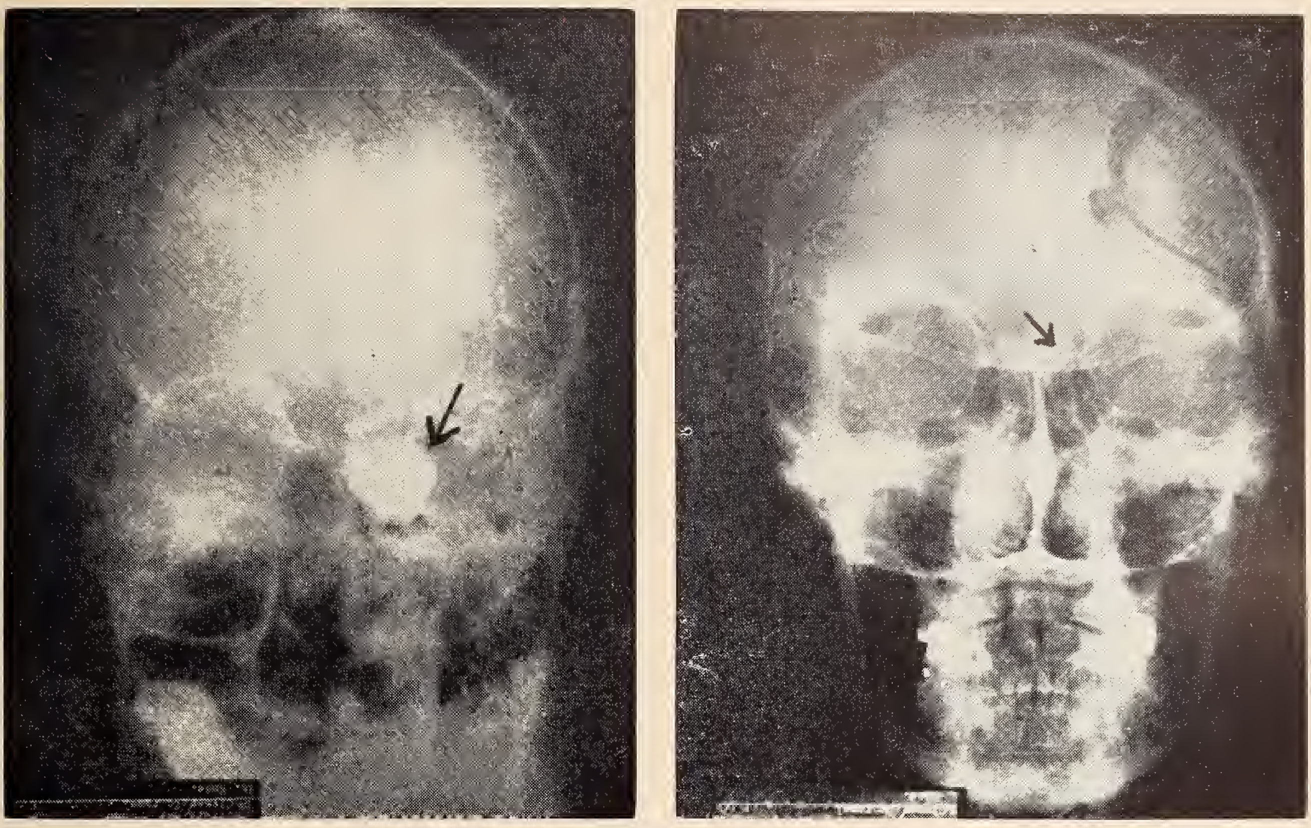


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Fig. 3

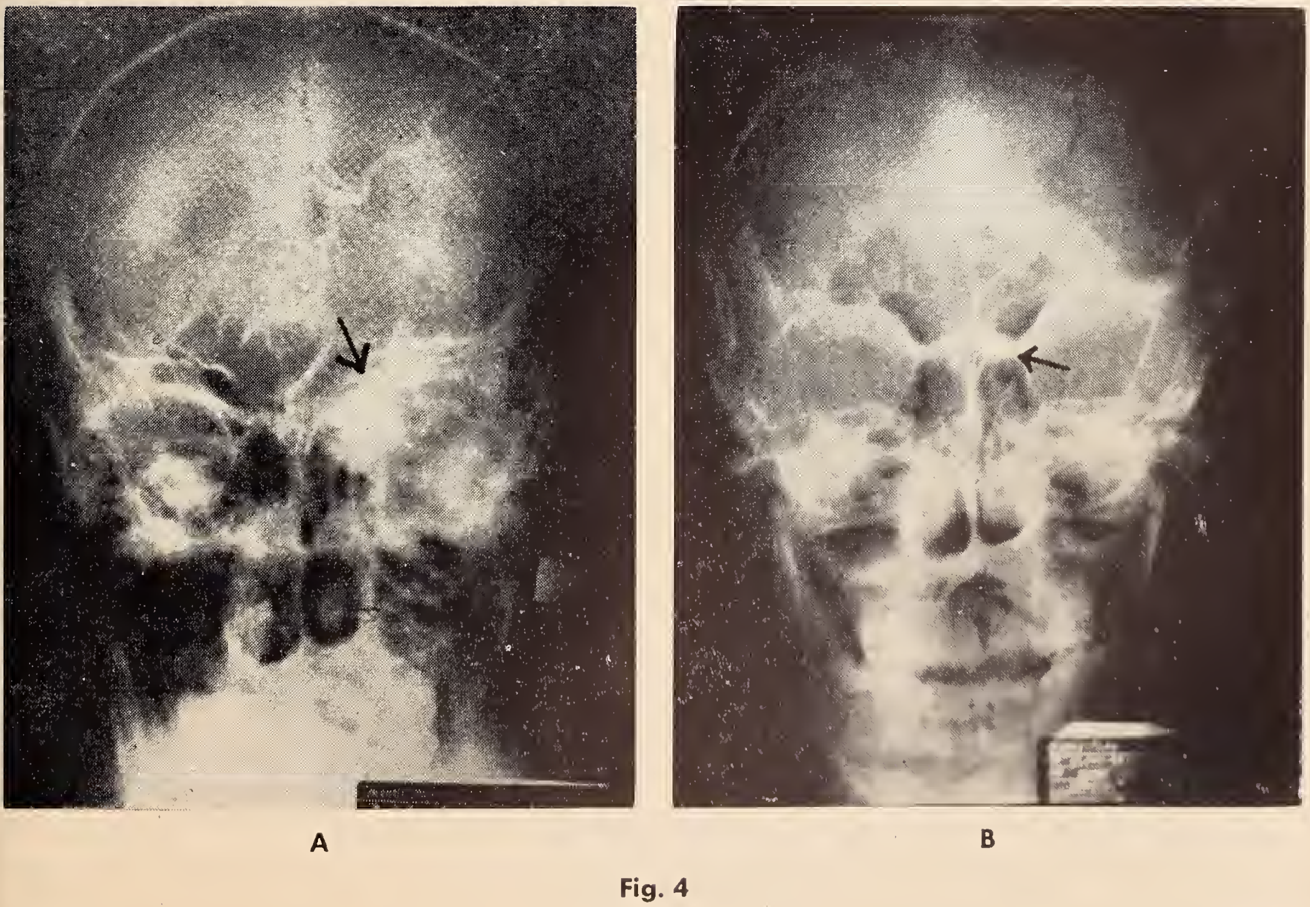

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Fig. 4

30 minutes each day (Matas test) created no symptoms. Within four days it was apparent that the aneurysm must be increasing in size because of the development of increasing pain behind the left eye and the appearance of a left oculomotor palsy.

On September 10, 1958, under hypothermia to 30.5° C., the left internal carotid artery was ligated in the neck. The infraclinoid saccular aneurysm was then "trapped" by means of an Olivecrona clip just above it on the intracranial portion of the internal carotid artery. (Figs. 3 and 4)

During the next three months she made an uneventful recovery, except for the persistence of the left ocularmotor palsy and the worsening of the chronic anxiety state. Consulting psychiatrists recommended psychosurgery. Bilateral orbitofrontal lobotomy was done on November 4, 1958. Her anxiety disappeared and no detectable intellectual defect resulted from this selective lobotomy procedure. By December of 1958 the oculomotor palsy began to recover. Her recovery has been complete since May of 1959 and she has resumed golfing. She was last examined on November 15, 1959 and showed no detectable neurologic deficit.

PRINCIPLES OF MANAGEMENT OF CEREBRAL VASCULAR DISEASE

1. Accurate clinical history and examination.

2. Neurological examinations for localization of the lesion and determining its nature.

3. Skull x-rays.

4. Lumbar puncture with recording of the spinal fluid pressure, and examination of the fluid for blood, cells, total protein and serologic data.

5. Carotid angiography and sometimes vertebral angiography, if subarachnoid hemorrhage is present. The optimal time for aniography is usually seven to fourteen days after the hemorrhage has occurred.

6. Anticoagulants only if a conclusive diagnosis of intermittent insufficiency or embolism in the cerebral circulation is determined. Air studies, electroencephalogram and angiography may be necessary to exclude neoplasm.

7. Ligation of the carotid artery in the neck and/or intracranially, depending on the location and nature of the cerebral vascular anomaly.

8. Bed rest for six weeks following spontaneous subarachnoid hemorrhage if surgical treatment is not feasible.

9. Physical medicine and rehabilitation therapy as soon as the patient's condition permits.

CONCLUSIONS

1. Each patient who is considered to have any type of cerebral vascular accident should have an early accurate diagnosis before treatment is instituted.

2. Cerebral vascular surgery has matured sufficiently during the past twenty years to occupy an important place in the treatment of many cerebral vascular diseases — especially intracranial aneurysms, arteriovenous aneurysms and carotid-cavernous fistulas. Such treatment administered by an experienced team including the neurologist, neurosurgeon, neuroradiologist, and anesthesiologist has materially reduced the morbidity and mortality of these potentially catastrophic conditions.

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NOTE: The author is indebted to Dr. A. Ortiz of Phoenix for the Spanish translation of this material.

CIRUGÍA CEREBRO-VASCULAR*

PRINCIPIOS DE TRATAMIENTO

por

John R. Green, M.D., F.A.C.S.**

EL CONOCIMIENTO de las enfermedades vasculares del cerebro ha evoluoionado lentamente.

Claudio Galeno,(1) Griego, nacido en Pérgamo en el año 130 A.D. ye médico de cabecera del emperador Marco Aurelio, enseñaba a sus discípulos que la hemorragia en el cerebro obstruía el flujo normal de los fluídos animales hacia los órganos de movimiento y de sensación trayendo como resultado la hemiplegia y la pérdida del conocimiento. El concepto galénico de la "rete mirabile," fuente originaria de los fluídos animales y trasmitida del cerebro de los ungulados al hombre dominó el pensamiento médico durante los 1400 años subsiguientes. Aún en la Tabulae Sex(2) de Vesalio, publicada en 1538, apareciá un diagrama de la rete mirabile. Wepter(3) en 1658 describió en forma excelcnte la hemorragia cerebral y también los vasos sanguineos de la base del cerebro. Veinte años más tarde, Sir Tomas Willis(4) describió lo que hoy día se conoce como el círculo de Willis. Ruysch,(5) en 1721 demostró la riqueza vascular del cerebro con técnicas de inyección. El drenaje venoso del cerebro había sido ya demostrado magistralmente por Vesalio en 1543 y por Highmore en 1651. La trombosis y el embolismo cerebral no se reconocieron hasta principios del siglo diecinueve.

El aneurismo se menciona en los trabajos de Aetius(6) en el siglo seis, y el término "aneurismo arterio-venoso" se le atribuye a William Hunter(7) en el siglo dieciocho. A principios del siglo diecinueve empezaron a aparecer descripciones de aneurismos de la base del craneo y del cerebro con información neurológica bastanta precisa. Se cree que Coe y Swayne fueron los primeros en ligar con éxito la carótida en el cuello para corregir un aneurismo intracranial en 1855. En 1911 Zeller hizo un atentado a ligar intracranialmente la carótida interna de un paciente con un exoftalmo pulsante cuando la previa ligadura de la carótida común no corrigió el defecto. El paciente murió de hemorragia cuando un ayudante desgarró accidentalmente la arteria al halar la ligadura. Hamby y Gardner en 1933, aunque desconcían ese caso, fueron los primeros en ligar con éxito la carótida interna intracranialmente con seda después de ligar la carótida interna en el cuello en un caso de fístula cavernosa de la carótida. Dos años más tarde Dandy(11) usó por primera vez la grapa hemostática de plata para ligar la porción intracranial de la carótida interna. Después de esto los aneurismos intracraniales se han curado atando el cuello del saco o los vasos aferentes y eferentes.

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*Trabajo presentado en la convencion anual de la Sociedad Medica de los Estados Unidos de Norteamerica y de Mexico en el Hotel Valley Ho, Scottsdale, Arizona, 4 de diciembre de 1959.

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La cirugía cerebro-vascular se ha afianzado más con dos avances en la técnica a saber: (1) La angiografía cerebral usada por primera vez por Egas Moniz(12) en 1927 y perfeccionada por muchos otros poco a poco ha ido tomando más auge en el diagnóstico objectivo y en la localización de lesiones vasculares del cerebro. Este procedimiento está indicado en todo caso de hemorragia sub-aracnoidal y de exoftalmos pulsante así como en la mayoría de los pacientes en que se sospeche la trombosis cerebral, a fin de excluir condiciones como aneurismos, neoplasmas y otras lesiones ocupantes de espacio. Las angiografías, carótida y vertebral, demuestran todas las areas del cerebro y se indican tan pronto como la condición del paciente permita más investigaciones para hacer un diagnóstico preciso. (2) La hipotermia ha sido de gran utilidad en la cirugía cerebro-vascular debido a que el metabolismo cerebral disminuye en relación directa a la baja en temperatura. Botterel y sus socios últimamente han perfeccionado métodos de hipotermia que no tienen riesgo mayor para el paciente a la par de ser efectivos. La técnica permite que el cirujano opere con la temperatura del paciente un unos 20° C. de manera que se pueden ocluir temporalmente ambas carótidas o cualquier porción de ellas por un lapso de hasta quince minutos mientras se extrae o se corrige el defecto vascular. La hipotermia en manos de un "team" competente es una técnica inocua y libre de complicaciones para el paciente.

CASOS CLÍNICOS

A continuación se presentan tres casos ilustrando problemas clínicos típicos.

1. *Fístula carótido — cavernosa* — El paciente A. R., niño de 12 años de edad, sufrió una fractura basilar del craneo en diciembre de 1957 y más tarde desarolló proptosis del ojo derecho y un soplo vascular sobre el ojo se que sincronizaba con el latido del corazón. No podía abducir el ojo después del accidente. Al examinarlo en julio de 1958 se le encuentra la proptosis, congestión de las venas alrededor del ojo y un soplo con vibración palpable (thrill). El músculo abductor derecho estaba paralizado. No se le encontró exoftalmo pulsante.

Los estudios angiográficos hechos en julio 28 de 1958 confirmaron el diagnóstico clínico de fístula carótido-cavernosa. Se le hicieron angiografías de la carótida y la arteria vertebral izquiredas a fin de estudiar la circulación colateral y descubrir cualesquiera vasos abastecedores de la fístula. Se decidió que la arteria carótida derecha era la única abastecedora de la fístula.

La prueba de Matas fué negativa (ausencia de síntomas al comprimir la carótida). El soplo y el "thrill" desaparecieron temporalmente con esta prueba. Basándonos en estas observaciones decidimos ligar la carótida interna.

El "thrill" y el soplo desaparecieron inmediatamente y la proptosis disminuyó durante el mes subsiguiente. En abril de 1959 los síntomas preoperatorios volvieron a manifestarse. Entonces decidimos interrumpir la fístula ("trapping").

En junio 1 de 1959, bajo hipotermia de 30° C. se le ligó la carótida interna en el cuello y se le colocó una grapa de Olivecrona en la arteria intracranialmente. El paciente se ha restablecido por completo y ya regresó a la escuela y participa hasta en deportes. (Fig. 1, 2)

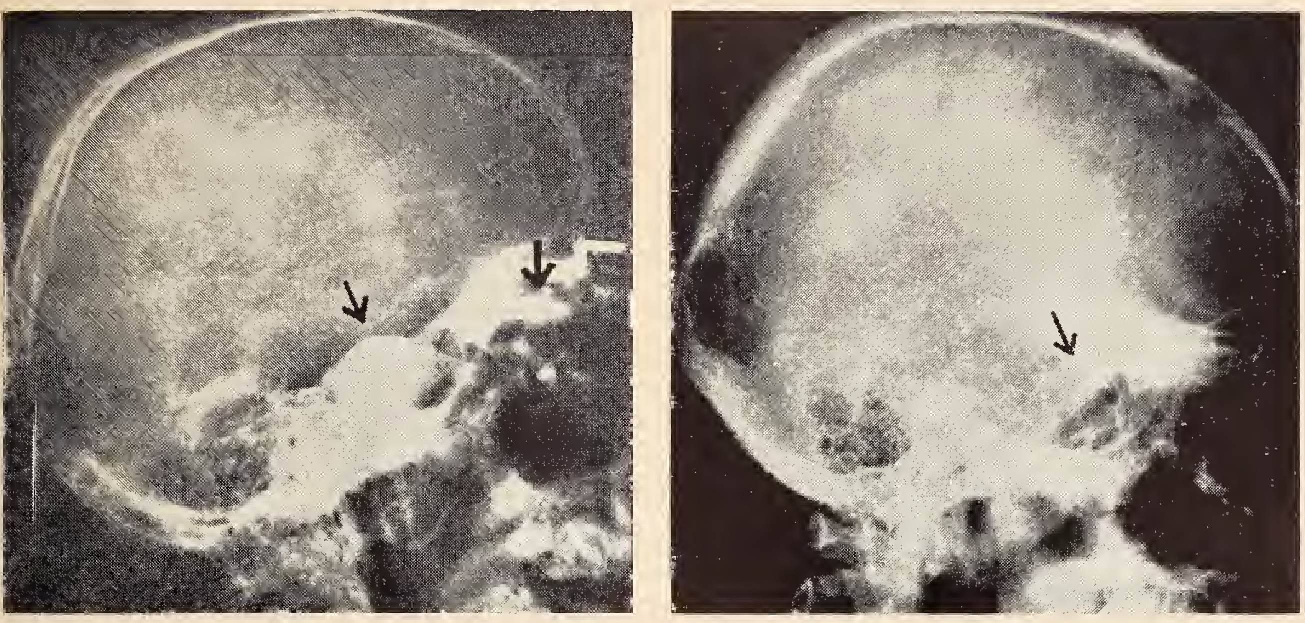
2. *Aneurismo en racimo, arteria cerebral media de la izquierda con hematoma del lóbulo temporal izquierdo.*

El paciente R. W. tuvo dos derrames subaracnoidales espontaneos en diciembre de 1958. Al examinarlo en enero de 1959 se encontró un hombre de 38 de edad letárgico, afásico con ligera hemiparesis derecha y paralisis del oculomotor izquierdo. Tenía rigidez de la nuca y se le encontró sangre en el fluído cefaloraquideo. La presión era de unos 380 mm. de agua. La historia reveló que el enfermo había sufrido un episodio similar en 1952, pero en aquella ocasión, no se hizo un diagnóstico definitivo.

La angiografía bilateral de las carótidas en enero 6 de 1959 demostró un aneurismo arterio-venoso grande en la arteria cerebral media de la izquierda, desplazado hacia arriba. La arteria cerebral anterior izquierda se había desplazado hacia el lado derecho del cerebro. El diagnóstico ya mencionado se hizo.

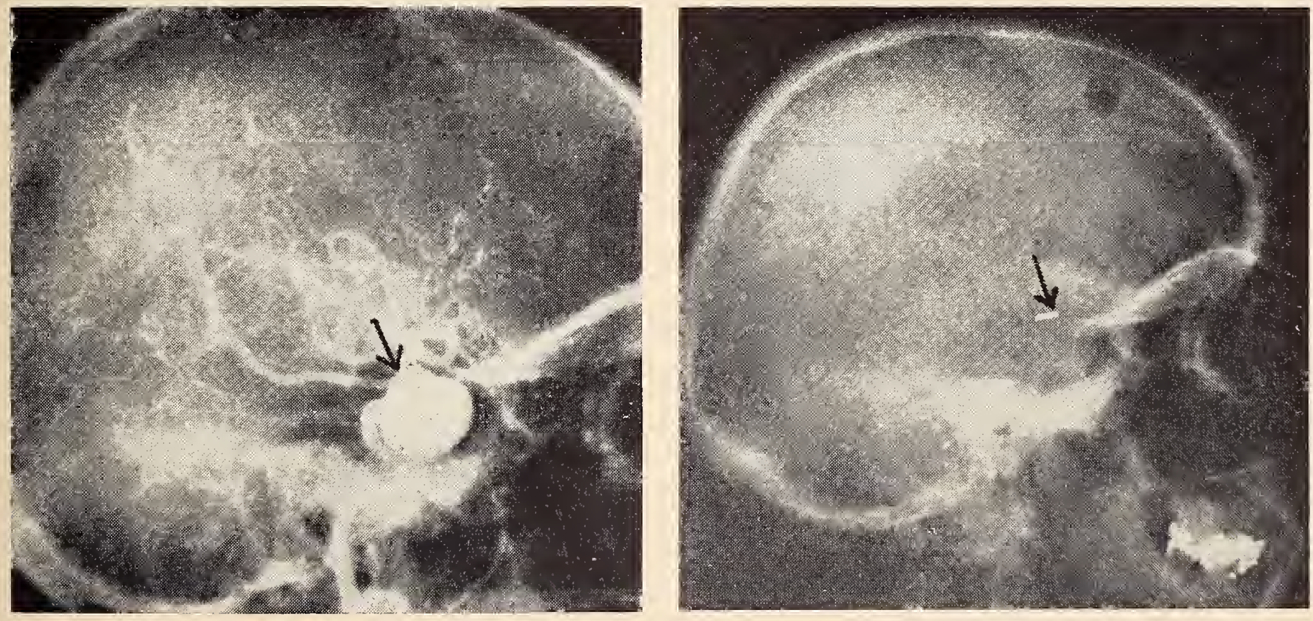
En enero 8 de 1959 se le evacuó un hematoma del lóbulo temporal izquierdo y el aneurismo arterio-venoso fué extraído de sus vasos abastecedores. La operacion se hizo bajo hipotermia de 89° F. y bajo supervisión del "autotherm," el monitor cardiaco, y con termometros en el esófago y en el recto.

Para marzo de 1959 ya el paciente estaba trabajando y se ha sentido bien hasta la fecha.



A B

Fig. 1



A B

Fig. 2

La única deficiencia neurológica que se notó en noviembre de 1959 fué una hemianopsia parcial del cuadrante superior derecho. Este defecto, sin embargo, no obstaculiza sus actividades normales.

3. *Aneurismo sacular de la carotida interna izquierda — porción intracranial.*

La paciente H. D. de 61 años de edad, vino a nosotros por referencia de un psiquiatra. Ella se quejaba de mareos y de que se le empañaba la vista. Ademas sufría de un estado de ansiedad crónico y severo. En mayo de 1958 se le encontraron defectos bilaterales en el cuadrante temporal superior de la vista pero mantenía una agudeza de 20/20 en ambos ojos. No manifestaba más síntomas que la ansiedad severa que no había respondido ni a drogas ni al tratamiento psiquiátrico. En agosto 26 de 1958 había tenido dos breves episodios de diplopia pero nunca manifestó parálisis de los músculos extra-oculares. En las radiografías del craneo la silla turca aparentaba estar inflada.

En agosto de 1958 se le hizo una angiografía y se la descubrió un aneurismo grande en forma

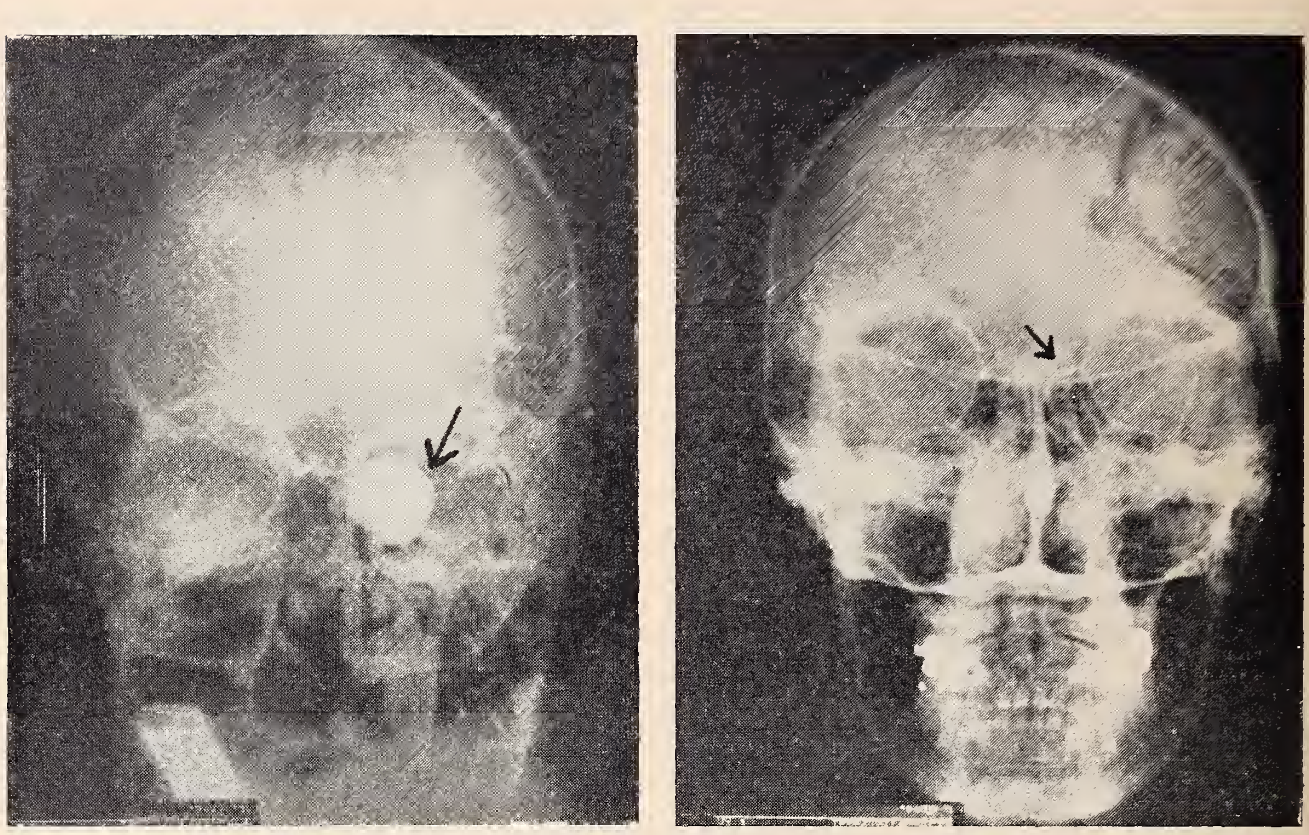


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Fig. 3

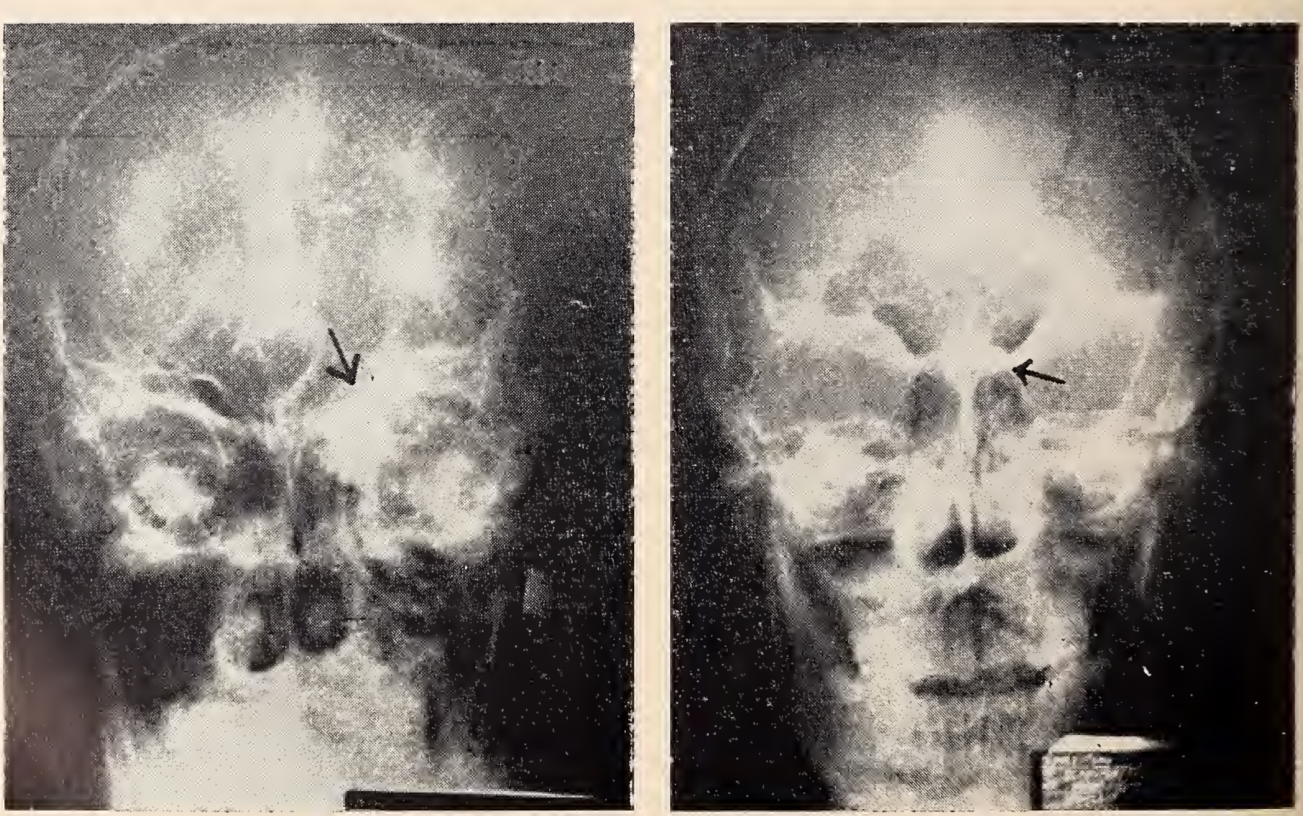

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Fig. 4

sacular en la porción infraclinoidal de la arteria carótida interna junto a la unión de la arteria cerebral posterior. En agosto de 1959 se le ligó la carótida común izquierda después de hacerle la prueba de Matas (compresión digital de la carótido) cada día por términos de hasta 30 minutos. Como a los cuatro días la enferma comenzó a sentir dolor setrás del ojo izquierdo y empezó a manifestar parálisis del oculomotor izquierdo.

El día 10 de septiembre de 1958, bajo hipotermia de 30.5° C., se le ligó la carótida interna en el cuello. El aneurismo sacular infraclinoidal fué interrumpido con una grapa de Olivecrona colocada en el cuello superior del saco en la porción intracranial de la arteria carótida interna. (Fig. 3, 4)

En los tres meses subsiguientes la enferma se restableció sin novedad a excepción de la parálisis del oculomotor izquierdo y el empeoramiento de la ansiedad. Los psiquiatras de consulta recomendaron psicocirugía. En noviembre 4, 1958 se le hizo una lobotomía bilateral orbitofrontal. La ansiedad desapareció y no se notó defecto intelectual alguno después de la operación. Para diciembre de 1958 ya comenzaba a desaparecer la parálisis del oculomotor. Su restablecimiento ha sido completo desde mayo de 1959 y la paciente ya hasta juega al golfo. En el examen de rutina del 15 de noviembre de 1959, no se hallaron deficiencias neurológicas.

LOS PRINCIPIOS BÁSICOS EN EL MANEJO DE LAS ENFERMEDADES CEREBRO-VASCULARES

1. Haga una historia clínica precisa y un examen completo.
2. Haga los exámenes necesarios para localizar la lesión y determinar su saturaleza.
3. Estudios radiográficos del craneo.
4. Haga punción raquidea midiendo la tensión intraraquidea y ordene examen del líquido con recuento de eritrocitos, leucocitos, proteína y serología.
5. Haga angiografía carótida y si es necesario haga angiografía vertebral si hay hemorragia subaracnoidal. El major tiempo para la angiografía generalmente es entre los siete y los catorce días después de la hemorragia.
6. Use los anticoagulantes solamente cuando haya hecho un diagnóstico definitivo de insuficiencia intermitente de la circulación cerebral o si sospecha un embolismo. La neumoencefalografía, el electro-encefalograma y la angiografía se hacen cuando se sospecha un neoplasma.
7. Se liga la carótida en el cuello, intracranialmente, o en ambos puntos, de acuerdo con a ubicación de la anomalía cerebro-vascular.
8. Haga que el enfermo permanezca en cama por seis semanas después de una hemorragia subaracnoidal si el tratamiento no es factible.
9. Instituya fisioterapia y rehabilitación tan pronto como la condición del enfermo lo permita.

CONCLUSIONES

1. Todo paciente en quien se sospeche un accidente cerebro vascular de cualquier clase debe ser sometido a todos los examenes necesarios, a fin de hacer un diagnóstico preciso antes de comenzar el tratamiento.

2. Por los adelantos alcanzados en los últimos veinte anos la cirguía cerebro-vascular ha alcanzado un lugar de suma importancia en el tratamiento de muchas condiciones cerebro vasculares, particularmente los aneurismos intracraniales y arterio-venosos y las fístulas carítido cavernosas. El tratamiento bajo la dirección de un grupo competente compuesto por un neurólogo ha reducido la morbilidad y la mortalidad de estas condiciones que pueden tener resultados catastróficos para el enfermo.

THE AVERAGE FEE CHARGED BY VARIOUS SPECIALISTS

For Each Office Visit

Obstetrician — Gynecologists	$6.03
Internists	5.64
Pediatricians	5.17
Surgeons	4.97

(from New Medical Materia, April 1960)

Hysterectomy*

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In defense of a much maligned procedure, there are many excellent reasons for performing hysterectomies. Mortality is low. Careful evaluation is always needed and a thorough explanation of the procedure to the patient is a must if psychotic and neurotic reactions are to be avoided.

HYSTERECTOMY may seem to be a somewhat old and hackneyed subject. Indeed one might wonder what there is to be said about it that hasn't already been said. To some extent this is true, yet there are controversial aspects even at this present time which make the subject a matter of interest to us all. Every one of us is familiar with the diatribes which have been written concerning "unnecessary" hysterectomies and "commercial" hysterectomies. The uterus has been protected in a manner unparalleled for any other organ. The removed uterus has been discussed by tissue committees in extenso, unless obvious pathology has been present. The right to perform a hysterectomy has been limited to certain qualified individuals, and in addition consultations regarding the advisability of the operation have been demanded in most hospitals regardless of the surgeon's qualifications. It has almost seemed as if the uterus were a sacred organ. There has been overprotection, I believe, because in the vast majority of instances the hysterectomies have been proposed for very reasonable indications and performed in an adequately skillful manner. It has been decidedly exceptional when a hysterectomy has been patently unnecessary or solely commercial.

At this time I propose to share with you my own distillate of beliefs regarding this subject. I would expect that most of us would list much the same indications and subscribe to the same principles of management, though of course we cannot all look at any given problem in exactly the same manner. With a common background of knowledge, we should be able to come to roughly the same conclusions, nevertheless.

Objectives

One must keep clearly in mind the objectives of a hysterectomy. The principal objective is to relieve a condition which cannot be treated as satisfactorily in any other way. In order to make the decision that hysterectomy is indicated, one needs only to be conscientious. It is essential that thorough and careful consideration be given to the patient from the point of view of the presenting pelvic condition and from the point of view of the general condition in order to avoid undue hazard. We need only to ask ourselves the question: Under the circumstances, would we want to have the operation performed upon our wives or our daughters? When that question can be answered in the affirmative, no one can ask for more.

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*Presented at the Ogden Surgical Society meeting, May 20-22, 1959, Ogden, Utah. Dr. Morton is Chairman, Department of Obstetrics and Gynecology, University of California, Los Angeles. (Reproduced through cooperation with the ROCKY MOUNTAIN MEDICAL JOURNAL.)

Advantages

In order to crystallize our thoughts regarding hysterectomy, I should like first to list the advantages of hysterectomy:

1. It removes an organ containing a tumor such as a myoma or a cancer.
2. It removes the source of excessive bleeding, due either to a tumor or to a functional disturbance.
3. It prevents further menstruation (under some circumstances this is an advantage).
4. It prevents further pregnancies (advantageous in some circumstances and the exact opposite in others).
5. It is prophylactic against cancer of the uterus. In my opinion, the prophylactic value of hysterectomy has been neglected in the past. In practice we have spoken of it retrospectively, comforting ourselves with the knowledge that it is at least prophylactic when we have removed a uterus and failed to find the expected pathology; prophylaxis has rarely been considered an indicating factor.
6. It produces a sense of relief at the abolition of the necessity for contraception.

Disadvantages

The advantages are not applicable to all cases; we must also look at the other side of the picture and consider what are the disadvantages of hysterectomy, as follows:

1. It prevents further childbearing, a distinct disadvantage under many circumstances.
2. It may have an adverse effect upon ovarian function. Most studies have shown that there is some adverse effect upon ovarian function though this is not an invariable fact. Whether impairment of blood supply or some unknown mechanism is responsible is not known. Follow-up studies have shown somewhat premature termination of ovarian function, as judged by the appearance of menopasual symptoms, following hysterectomy performed upon women in their twenties or early thirties.
3. It may produce an unfavorable psychologic reaction. This occasional development is extremely important and is often due to our failure to communicate properly with the patient ahead of time. We have not prepared the patient with information regarding the consequences of a hysterectomy, both of a positive nature and a negative nature.
4. There is a hazard in an operation like hysterectomy, though it is true that the mortality today is low.

Other considerations

The advantages and disadvantages which have been listed must be balanced one against the other in the light of the following considerations:

1. The urgency of the symptoms. Sometimes the operation can be postponed because of the mild character of the symptoms and sometimes it is unwise to postpone it because of the severity and urgency of the symptoms.
2. The age of the patient must obviously be considered since it is much more important to preserve the uterus in a young woman than it is in those who are nearing the menopause.
3. The marital status and parity of the patient must both be considered.
4. The general condition of the patient must of course play an important role.
5. The patient's emotional balance. I am certain that women who are inclined to be easily upset emotionally are very much more likely to be upset by hysterectomy than those who are more phlegmatic.

Indications

The most generally acceptable indications are listed in Table 1. Each will be discussed briefly.

TABLE 1

Indications for hysterectomy

Myoma
Sarcoma
Adenomyosis
Menorrhagia
Carcinoma of Cervix
Carcinoma of Endometrium
Chorionepithelioma, Chorioadenoma destruens
To effect sterilization
Incidental to operative removal of tubes and ovaries for diseases of these structures (e.g., P.I.D., ovarian carcinoma, etc.)

Myomas of the uterus constitute an indication for hysterectomy when they cause excessive and/or prolonged bleeding. This occurs in not over one-third of the patients who have myomas. Myomas may demand hysterectomy because of increasing size. When the uterus has become enlarged to a size in excess of a three and one-half months' pergnancy, hysterectomy is generally advisable, though sometimes in young women myomectomy is preferable. Rapid growth of myomas indicates hysterectomy for fear of sarcomatous degeneration. Small asymptomatic myomas in women nearing 50 years of age usually demand observation only. The incidence of malignant degenration is low indeed, probably not over one-half of one per cent

Sarcoma of the uterus is a rare tumor and is usually not diagnosed until the uterus has already been removed for a supposed myoma or a bleeding polyp. Whenever the diagnosis is made peroperatively on the basis of rapid growth or of a bleeding polypoid mass protruding from the cervix, hysterectomy is indicated. Because these tumors frequently spread by the blood stream, there is no point in carrying out a locally radical operation like the Wertheim operation. Either the simple removal of the entire uterus (plus tubes and ovaries) cures the patient or, because of blood stream metastases, it does not. The prognosis is poor.

Adenomyosis of the uterus is often associated with menorrhagia and a clinically symmetrically enlarged, thick-walled uterus. Only ocasionally is dysmenorrhea a symptom. As with sarcoma, adenomyosis is often diagnosed only upon examination of the specimen in the pathology laboratory. Hysterectomy is often demanded because of the severe degree of menorrhagia, however.

Menorrhagia. This indication is one of the most controversial of all, since it is difficult to fix a point beyond which more conservative measures become no longer useful. It is controversial also because it often occurs in young women in whom removal of the uterus would be most undesirable because it is often associated with no demonstrable pathologic change and because in many instances menorrhagia can be controlled by a well conceived regimen of hormone therapy or by endometrial curettage. Nevertheless, there are patients, more partieularly in the premenopausal and menopausal groups, in whom other methods have failed, for whom hysterecomy is the best solution regardless of the lack of pathologic findings. Patients with menorrhagia for whom hysterectomy is the best treatment probably constitute not more than 5 to 10 per cent of all patients with this complaint.

Carcinoma of the cervix is most widely treated by means of radiation. Certain gynecologists and surgeons are currently electing to treat Stage 1 cervical cancer by means of radical hysterectomy. In expert hands the results approach but do not exceed those of radiation. However, for Stage 0 cervical cancer, also spoken of as carcinoma-in-situ, ordinary total hysterectomy with a one-inch vaginal cuff is considered sufficient and is the most widely approved method of treating this condition at this time.

Carcinoma of the endometrium requires total hysterectomy and bilateral salpingo-oophorectomy as the treatment of choice. The majority of authorities favor preoperative radium therapy six weeks before operation, but the superiority of the latter over hysterectomy alone has not been clearly established. It appears that preoperative radiation might be an advantage when the growth is bulky and/or poorly differentiated. When the uterus is only slightly enlarged or normal in size, and especially when the growth is superficial in the uterine cavity and well differentiated histologically, the value of pre-operative radiation is doubtful.

Whenever the diagnosis of chorionepithelioma of the uterus has been made, hysterectomy is indicated even though distant metastases have already occurred because of the strange manner in which the latter sometimes disappear when the parent tumor has been removed. Hysterectomy is also indicated for chorioadenoma destruens and indeed in some cases of ordinary hydatid mole when the condition represents a second occurrence and also when the patient has already "had her family" or is just plain old for child-bearing.

Hysterectomy is employed by some to effect sterilization at the time of a third, fourth or fifth Cesarean section. While I do not personally believe that it should be so used routinely, I do believe that it is the superior method of sterilization wherever the uterus is abnormal or the patient is more than 35 years of age. The reasons for this belief are (1) the certainty of the sterilization and (2) the prophylaxis provided against functional menorrhagia and uterine cancer especially. I do not like it for the younger women because it stops menstruation and may affect the ovaries adversely.

Hysterectomy is generally performed incidentally at the time of removal of the tubes and ovaries for diseases of these structures, such as pelvic inflammatory disease, endometriosis, and cancer, and this is a practice which I deem to be advisable. In the case of cancer, the uterus could be a repository for metatases or direct spread from tubes or ovaries, while in the case of inflammatory disease or endometriosis the presence of the uterus postoperatively might preclude the possibility of adequate indicated estrogen therapy. Even in the case of uterine prolapse the removal of the uterus is usually merely to get it out of the way, allowing for a proper repair of the vaginal walls and the pelvic floor.

In Table 2 I have attempted a comparison of indications as reported in contemporary series of cases, though the differences in the methods of classifying indications makes it impossible to compare exactly. Nevertheless, I think it is apparent that practices in widely different areas of the country are similar, though there are some outstanding differences in material related to the economic status of the patients dealt with and the geographical areas represented.

TABLE 2
Comparison of indications

	Percentage of Total			
	Toronto General Hospital(1)	Private Toronto Hospital	Ochsner Clinic(2)	UCLA
Myoma	35	23	43	23.5
Endometrial Ca	12.5	8		11
Cervical Ca	4.5	0.5	10.5	21
Stage 0			7.5	13.4
Stage 1			3.3	2.3
Recurrent				5.7
Sarcoma				1.2
Chorio-carcinoma				0.6
Incidental	40	43.8		40.7
Prolapse	11	27		19.8
P.I.D.	10	3	6.2	4
Endometriosis	2.5	5	12.4	1.7
Ovarian tumor	7.5	4.25		14.5

Type of operation

So much for the indications for hysterectomy. I should now like to turn our attention to several other considerations relating to hysterectomy. The first of these is the type of operation. Vaginal hysterectomy has increased greatly in popularity in the last 10-15 years. The frequency of its use varies considerably in different areas and with the training of the individual doctors. Many uteri are removed vaginally today which would have been removed abdominally in the recent past. The original popularity of vaginal hysterectomy was based upon fewer complications and a lower mortality than for abdominal hysterectomy. While these differences used to exist, I doubt if they do today for cases of similar type. Any over-all comparison will always be in favor of vaginal hysterectomy because in the tough cases this operation is not attempted; the uterus is removed abdominally. Vaginal hysterectomy is particularly applicable to those cases in which there is uterine prolapse or in which simple vaginal repair is indicated also.

The recent report(2) from the Ochsner Clinic in New Orleans gives what I believe to be a good representative idea of the relative use of the various types of hysterectomy today. There were 2,284 consecutive hysterectomies in this series, of which 74 per cent were total abdominal operations, 25.4 per cent were vaginal hysterectomies and approximately 0.5 per cent were subtotal hysterectomies. Watts and Kimbrough(3), in an analysis of 1,000 hysterectomies at the Pennsylvania Hospital, reported total abdominal hysterectomies in 69.2 per cent, vaginal hysterectomies in 25 per cent and subtotal operations in 5.8 per cent. The figures from these divergent sources are similar and seem to me to be about what they should be. We should not lose track of the fact that subtotal hysterectomy is indicated on occasion when it is unwise to proceed with a total hysterectomy.

Mortality

Another consideration of interest is the mortality of hysterectomy which has come down to a very low figure indeed. This is not to say that we should regard the risk of hysterectomy as insignificant because the figure is low. Indeed there does remain a hazard of operation which must never be taken lightly. The mortalities for both abdominal and vaginal approaches are low, only two deaths in the Ochsner series of 2,284 cases, 1.2 per cent in the series from the public hospital in Toronto and 0.6 per cent from the private hospital in that city (referred to in Table 2). Watts and Kimbrough had one death in their 1,000 cases or 0.1 per cent. In 1,000 vaginal hysterectomies at Oxford, England, Hawksworth and Roux(4) reported one death and of 1,000 cases of vaginal hysterectomies reported by Benson(5) of Portland, Oregon, there were no deaths.

The principal complications are hemorrhage, infection and injury to the bladder, all of which occur in a small proportion of the cases, whatever the type of operation. Ureteral injuries are being reported with far less frequency in recent years. Acute hemorrhage at the time of operation is encountered occasionally when dealing with large or oddly placed tumors and because of injury to the pelvic veins in radical cancer operations. However, because of appropriate preoperative preparations, this type of hemorrhage is almost never fatal. More common is delayed hemorrhage from the vaginal cuff or the immediately surrounding paracolpium usually associated with infection. Meticulous control of bleeding points in the cuff and its investment at operation and prompt attention to signs of infection are good prophylactic measures.

Injury to the bladder must ever be kept in mind and special efforts made to avoid hidden injuries. Actually it is better to open the bladder deliberately than to injure it unknowingly and therefore fail to repair it properly.

Subtotal hysterectomy

The subtotal operation has gone out of style because of the incidence of cancer occurring in the leftover stump. The only exceptions are cases in which the total operation would be technically unwise. This seems sound and is widely practiced. To support the validity of this viewpoint the report of Cariker and Dokerty(6) in 1957 is of interest. They reported 334 cases in which a cervical stump gave rise to a complication, as follows:

1. Subsequent vaginal bleeding, mostly cyclic –71.
2. Prolapse–100.
3. Pelvic mass–46.
4. Inflammation–26.
5. Cancer–78 (in 28 it proved fatal).

So-called intrafascial hysterectomy is favored by most for the ordinary abdominal hysterectomy and no doubt it does add to the safety of the operation as far as bladder and ureteral injury are concerned.

Explain everything

Of great importance is the advisability of discussing the implications of hysterectomy with the patient before operation. Many patients have misapprehensions which lead to difficulties later on. Often women associate hysterectomy with deprivation of their femininity or they feel guilty and unhappy over not being able to have children. Or, they are convinced that they will be deprived of sexual responsiveness, etc. These attitudes should be corrected before operation. Kroeger makes the interesting observation that pelvic surgery produces more psychotic reactions than any other type of surgery. It is my contention that it need not do so if the significance of hysterectomy is thoroughly discussed with the patient before operation.

Summary

In summary, we would like to turn again to the advantages of hysterectomy and emphasize that the operation is curative in a great many conditions and has an excellent prophylactic value. It should not be done lightly but, if there is indication, the uterus is not sacred and we should not hesitate. Careful evaluation and preparation are all important. Our conscientious attention to these matters should result in a sound, sensible and quite defensible attitude toward this operation.

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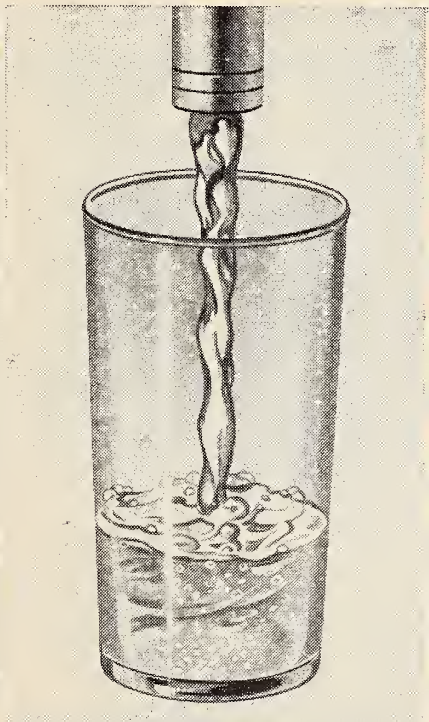

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Editorial

YOUR JOURNAL

Individual opinions are the driving forces which propel our destinies up the turbulent streams of strife toward Utopia.

The advance of society is greatly retarded because only a few of its citizens trouble themselves to share their thinking, conclusions and experiences with their fellow man. The self esteem of each individual is such that it justifies their conclusions, based on their experiences, as being good or even paramount. It is usually the fear of criticism and not humility that blocks their formal expression. This fear is unfounded, because those of wisdom who partake of the experiences of others are fully cognizant of the frailties of himself and others. The unfounded attacks by the ignorant are to be reconciled only by considering the source.

The fact that our own considered opinions are of sufficient magnitude to direct our individual destinies, qualifies them as presentable for others.

"Arizona Medicine" has been owned by the Arizona Medical Association, Inc., and recently The Association elected to also assume the full direction and publication of your medical journal. It is now, YOUR JOURNAL, to use and enjoy as you desire. It is the hope of the Editorial Board that you use this journal to communicate with your fellow practitioners, and thus discharge your obligation to share your experiences and opinions. It is fully realized that these contributions will be as varied as the personalities of the members, and that the subjects may relate to basic or clinical research, case presentations, medical history, professional conduct, social-economic problems, or current

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ARIZONA MEDICINE

Journal of

The ARIZONA MEDICAL ASSOCIATION, Inc.
AND
MEDICAL SOCIETY OF THE
UNITED STATES AND MEXICO

ADVERTISING AND SUBSCRIPTION OFFICES
Paul R. Boykin, Business Manager
1021 Central Towers, Phoenix, Arizona
Eastern Representative
A. J. Jackson, President
State Medical Journal Advertising Bureau
510 N. Dearborn St., Chicago 10, Illinois

VOL. 17 JUNE, 1960 NO. 6

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CONTRIBUTIONS

The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules should be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English or Spanish, especially with regard to construction, diction, spelling and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
3. Be brief, even while being thorough and complete. Avoid unnecessary words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
6. Exclusive Publication — Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unused manuscripts.
7. Reprints will be supplied to the author at printing cost.

(The opinions expressed in the original contributions do not necessarily express the opinion of the Editorial Board.)

events.

The fear that one can not prepare a manuscript need not be a deterrent. The Editorial Board will, in strict confidence, accept your presentations — give constructive criticism — have them edited by professional writers, if you so desire; and before any submitted material is published, it will be returned to each author for final approval. To write is to ventilate; and besides being helpful to others, it can be a great source of personal gratification. Let us hear from many of you. L.B.S.

LETTERS TO THE EDITOR

Darwin W. Neubauer, M.D. April 14, 1960
720 North Country Club Road
Tucson, Arizona

Dear Darwin:

In reference to the article on male impotence in this month's issue of Arizona Medicine; I am rather firmly convinced that the article is inaccurate, and much harm may be done by the administration of Gonadotropin. Sincerely

PAUL L. SINGER, M.D.

Dear Dr. Neubauer: March 24, 1960

This is in reply to your recent communication concerning H.R. 4700.

I haven't had an opportunity to make an intensive study of this legislation, as the House Ways and Means Committee, which has jurisdiction over it, has never processed the bill nor made any report to the House on it. Therefore, I am in no position at this time to take a flat position concerning its merits or demerits.

The best information available here is that action at this session of Congress is unlikely. However, judging by my mail the problem of adequate medical care for our retired citizens is a very real and urgent problem and it would seem to me that the best way to head off legislation such as H.R. 4700 is for the insurance industry to come up with new programs which will meet the needs of these citizens. I hope the insurance people will devote much careful time and creative effort to this challenge in the months ahead. Sincerely,

STEWART L. UDALL

EXAM IN THE BASIC SCIENCES

It is assumed that the examination was originally designed for one or all of three purposes: to keep unprincipled charlatans from claiming to be able to cure or heal; to weed out those practitioners who are practicing only part time in the state, i.e., the "vacationing physician"; and to relieve the competitive pressure in those areas of the state that are over-populated with physicians, i.e., Tucson and Phoenix.

Unfortunately, the examination fails to fulfill any of these ideals. It is designed not as an examination of practical knowledge of medicine, but as a study of the history and basic concepts of allied sciences. A man's ability to treat acute follicular tonsillitis or diagnose and remove a sick appendix are of no value. An unprincipled "quack" could as easily give the Bessemer Process of manufacturing steel as the best of neurosurgeons. Of what value to today's doctor is the knowledge that in 1884 some scientist suggested changing the name protozoa to protista? Thus, it fails in the first laudable premise.

A survey of those currently licensed in this state would show a large percentage of physicians who reside in "foreign" states whose practice here is confined to the winter months when they are on vacation. Thus, this examination is not discouraging this practice.

And, of course, this examination is not stopping the influx of specialists into the only areas of high concentration of population, as the smaller communities cannot attract men of this caliber. And, for this reason, there will continue to be a relative disproportion of physicians and over-crowding of certain areas regardless of any and all types of examination unless this were on a city basis.

What does the examination accomplish? I feel that it is negative. It discourages a number of fine physicians who would otherwise come to our state to practice. It makes it very difficult for small communities to secure the services of physicians at all. Other small communities are putting up with physicians who are alcoholics or drug addicts, or criminal incompetence.

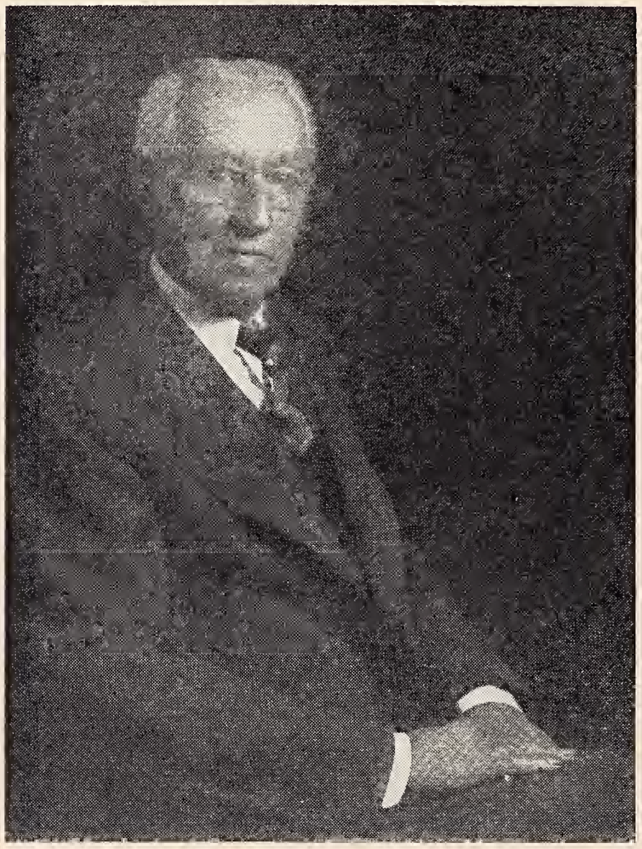
I would like to see the present law requiring this examination changed to conform to the present problems of this state. Possibly complete abandonment would be the answer. I have heard, although I do not know this to be factual, that Arizona students are refused admission to medical schools in North Carolina either in retaliation for this examination, or because as they say that there is no need to train these students when they will not be able to practice in their own state after completing their studies.

QUENTIN L. ERD, M.D.

In Memoriam

ERROL PAYNE PALMER, M.D.

1876-1960



E. PAYNE PALMER, SR., M.D.

The son of George Alfred and Virginia (Payne) Palmer born in Church Hill, Mississippi, October 30, 1876, and died at his home in Phoenix, February 6, 1960. Dr. Palmer practiced medicine and surgery in Arizona well over fifty years and was considered by many of his fellow physicians as the "Dean of Arizona Surgeons." He had served as Chief of the surgical service at St. Joseph's Hospital well over a decade and saw it grow from a twelve bed, "saw horse surgery" to an expansive modern multi-storied general hospital with twelve exquisitely appointed operating suites accommodating 325 hospital patients.

Dr. Palmer stated that his earliest recollection was "when I was four years of age, and I was living at Oak Grove, Church Hill, Mississippi, and at that time I began to ride horseback and a year later attended a country school several miles away. At six I learned to shoot and load a muzzle loading shotgun and we did a lot of hunting in those days." Dr. Palmer's early life was not all devoted to these pleasant pursuits for he stated that when he was eight years of age he began to make his first living picking cotton, he saved some of the money and "purchased a mustang pony that was brought with a drove of horses from Texas, and broke her for riding and driving. With her I made a cotton crop during my free time from school. I did all of the work in preparing the ground, seeding, cultivating and picking so that all of the profits were mine. As a result of my cotton crop I made enough money to go to Chamberlain-Hunt Academy at Port Gibson, Mississippi." Dr. Palmer has written in his direct, detailed manner, many of his experiences, with the permission of his widow Mrs. Bertha Schantz Palmer, a good portion of this narrative is as he himself related it.

Upon the death of his father it became mandatory for young Palmer to be responsible for his mother and a younger sister; this quickly gave him a sense of responsibility. While he was in grade school during summer vacations he worked on a plantation which belonged to an uncle and during this time he was in charge of the mail, purchasing supplies and paying off helpers. He hired the help and sold goods in the plantation store. He stated that he also learned to drive logging teams of mules and oxen and describes how when a new land was to be cleared that the Negro men of the community came to assist in the removing of logs and brush when the land was to be cleared. "The good logs would be rolled and be pulled into position to be drawn to the sawmill, while the inferior logs would be piled into a big heap with the brush and burned. The Negroes were given a big feed and all the whiskey they cared for. It was dispensed by the barrel, free of charge, but with the heavy work they were performing rarely did anyone ever become intoxicated."

He, his mother and sister, moved to Nanchez in September 1888 and Dr. Palmer's first job "was a printer's devil at $2.00 a week, a promotion to delivery boy from the same firm at $3.00 a week was quite an advantage for a boy." It was here that he later became employed in a retail-wholesale drug and stationery house and "I was moved from one department to another, the main business office, assisting in various ways – and finally was placed in the retail drug store where I began to study pharmacy under the tutorship of Mr. F. A. Dix, the druggist in the store." Young Palmer continued to work and study in this drug store and "took the Mississippi State Board of Pharmacy examination and passed receiving a license to practice pharmacy at the age of seventeen."

It was at this time that Dr. Palmer became interested in the study of medicine and he states that he bought his first Gray's Anatomy in 1894, it is still in his library. During all of this time he was supporting his mother and sister, and as noted, became a registered pharmacist. He moved his family to St. Louis and enrolled in Barnes Medical College. There were a few stumbling blocks to this, he found that he could not register directly in the Medical School because he did not have the "proper certificate of education," so "I took and passed the teacher's examination and received a teacher's certificate for Missouri. This was accepted as satisfactory proof of my qualification to matriculate at the Barnes Medical College. I entered in October 1895, the term was for six months courses over a three year period." In 1896 Palmer took the examination of the Missouri State Board of Pharmacy and secured a license to practice pharmacy in that state and all during the time he was in Medical School he worked as a pharmacist in drug stores in St. Louis.

One of his classmates in Medical School was Dr. R. O. Raymond who came to Arizona a few years after Dr. Palmer and located in Williams and later in Flagstaff. They both practiced in Arizona over fifty years and were friends well nigh on to sixty years before the passing of Dr. Raymond in 1959. Their combined active medical practice careers was well over a hundred years – in Arizona.

After graduation Dr. Palmer became an assistant to Dr. John Young Brown who was later the Professor of Surgery at St. Louis University Medical School. During this time he, Dr. Palmer, opened an office and entered into the practice of general medicine and "soon became busy." He joined the St. Louis Medical Society and was a regular attendant at the meetings.

In the winter of 1900 Dr. Palmer had an attack of "influenza" and was advised by his Senior Physician, Dr. Brown, to come to Phoenix to recuperate. This he did and arrived in Phoenix on April 1, 1900.

Since he was a Southerner by origin and disinclined to accept the foreboding winters of the Middle West he located in Phoenix and began his practice of medicine here. Dr. Palmer related many times that "Phoenix was a typical Western

Town of 4,532 population, there were many saloons with women entertainers and wide open gambling of every known kind."

In June 1900 he took the Arizona Board of Medical Examiners test and was awarded license number 102 and opened an office at 108 North "Center Street," now Central Avenue. His reputation was soon established as a skillful, well trained young surgeon and he became successful in his practice.

In the beginning of his practice here in Phoenix, Dr. Palmer liked to relate about making bicycle house calls in town but usually rented a horse and buggy from the livery stable for country calls. Apparently not too long after establishing here he bought a beautiful bay mare which he states "was about six years old, she was part thoroughbred, had been raised in the mountains and trained to drive but was very high strung and easily frightened." Mrs. Palmer remembers well his horse "Gypsy" and she agrees that the horse was "nervous and highstrung." She many times went with doctor to make house calls and states that the horse would seem to stand in the shade and sleep while doctor was in the house but when he got in the cart or buggy the horse was "surely ready to go."

Mrs. Palmer first came to Phoenix in 1907 with her brother who had been advised to come to this area for his health, and met Dr. Palmer, her future husband, through Dr. Palmer's sister, later Mrs. Lane. Mrs. Palmer's maiden name was Bertha Louise Schantz, her father was born in Germany, her mother in Indiana and she herself was a native of Dayton, Ohio and the eleventh of thirteen children. Dr. Palmer carried on a successful courtship of just three weeks before convincing the fair lady from Ohio that she should change her name to Palmer, which she promptly did August 1, 1907. After a delightful wedding trip they returned and made their home in Phoenix.

More about Gypsy. Dr. Warner Watkins used to relate how that when Dr. Palmer went to Europe to study in 1909 he sold this horse to Dr. Watkins who was going to look after Dr. Palmer's practice. Mrs. Watkins gives a vivid description about driving Gypsy one evening down to First Avenue and Adams Street, when the horse ran away, tipped over the buggy and frightened everyone considerably. Fortunately, Mrs. Watkins was not hurt. Well, this seemed to be enough for the Watkins' because Dr. Warner told me that he turned Gypsy "out to pasture" and continued making his calls on a motorcycle. A great many years later when the author heard these various stories we asked Dr. Palmer if it was true that he had sold Warner Watkins a run-a-way horse some fifty years ago. In his careful, mellow, southern drawl Dr. Palmer replied, "Young man that really isn't a good description of the horse, she wasn't a run-a-way horse but when you got in the buggy you had to be ready to go." When Dr. Palmer returned from Europe, Gypsy was brought in from pasture and traded back to him. The financial transactions of this "horse trading" were never clearly understood by anyone but Palmer and Watkins!

When Dr. Palmer came to Phoenix, "St. Joseph's Hospital had twelve beds and no operating room, two carpenter saw horses were placed in the patient's room and boards were put across the two saw horses to make an operating table." "The part to be operated upon was washed with warm water and soap, chloroform was the usual anesthetic and this was usually adminstered by some of the other surgeons."

In 1902 he "successfully removed a large brain tumor from a man who had received a head injury many years before," and during the same year he "performed a cesarean section," he believes that this may have been the "first of its kind or nearly so for each of these procedures in Arizona." Of the many calls which Dr. Palmer made into the surrounding area, Mrs. Palmer recalls an incident about which Dr. Palmer many times subsequently related, something as follows. This probably occurred about 1906 and Dr. Palmer was called to the Maricopa Indian Reservation to see the wife of the superintendent. She apparently was quite ill and it had been requested that Dr. Palmer bring a nurse with him. The Salt River "was at flood stage, and there was no bridge across the Salt River. We left Phoenix driving a double team and when we arrived at the river we were met by two Indians on horseback." Dr. Palmer has written this experience and we will quote it verbatum. "The Indians led the way across the river and as they crossed the river they divided further apart from us so I kept in a midway position in following them, when in the middle of the river one of our horses went down under the water in quick sand. This pulled the other horse down with him, and our buggy turned over dumping us into the swift current of the mid stream of muddy water. The nurse was washed downstream and went under the water once. When she was up I swam to her and caught her by the hair as she was going down the second time. I brought her to the surface and swam ashore with her all of the time holding her by her long hair. Today with bobbed hair, she probably would have drowned. All of this time the Indian guides were on their way, never looking back to see if we were safe."

In 1906 Dr. Palmer went to Chicago and spent six weeks visiting the clinics of Dr. J. B. Murphy and Dr. Albert J. Ochsner, two of the leading surgical teachers of that era and city. This began Dr. Palmer's regular tour of visiting prominent clinics and surgeons, a habit which he continued all of his life. On this same trip he visited Rochester, Minnesota to see the work of Drs. William and Charles Mayo. He became a fast friend of the Drs. Mayo and both they and their families visited Dr. Palmer and his family in Phoenix on occasion.

After practicing in Phoenix about ten years, Dr. Palmer decided to visit the Old World clinics, they left on July 1, 1909 making some visits on the way but eventually going to New York, Baltimore and Philadelphia where Dr. Palmer did special post-graduate work. His practice in Phoenix was taken over by Dr. Warner W. Watkins, who had recently come to Phoenix. Thereby hangs the tale of the sale of Gypsy the horse "who was ready to go once you got in the buggy," the horse that ran away with Mrs. Watkins, was turned out to pasture and apparently not driven very much until Dr. Palmer came back to Phoenix some two years later.

In New York Dr. Palmer enrolled as a special student in Cornell Medical College and studied pathology under Dr. James Ewing and attended the surgical clinics and lectures for the Senior students. He also secured an externship in the New York Hospital where he worked with Drs. Hadley and Johnson in the out-patient department and assisted them on all patients who went to surgery. He also worked with Dr. Cooley of the Cooley Toxin fame at the Hospital for the Ruptured and Crippled Children. They spent about one year or so in Europe dividing their time between Vienna, Berlin, Paris and London, all ef this time Dr. Palmer spent acquiring more knowledge in the fields of pathology and surgery.

At completion of this period of post-graduate study, Dr. Palmer established himself in Los Angeles, California, but very soon removed back to Phoenix. In later years when asked why he made this move back to Phoenix he said, "There are too many earthquakes in California." It is entirely possible that his many real estate and mining interests which he had already acquired in Phoenix and Arizona had quite as much to do with his return to Phoenix as the "earthquakes."

Now began the long fruitful period of the practice of medicine and surgery. During his professional life which continued well over fifty years, Dr. Palmer was the author and contributed over sixty-five formal papers to the literature. His range of subjects was legion. In the New York Medical Journal, November 17, 1960, he published, "Phoenix Arizona as a Health Resort for Tuberculous Patients". In 1904 he discussed "Normal saline solutions and their physiological uses". Then there follows a whole range of titles relating to cancer, its cause, individual case reports and the treatment of regional cancer. He was a pioneer in the use of lumbar spinal anesthesia and as early as 1910 on one of his visits to Baltimore he demonstrated the use of it to Dr. H. Young.

In 1936 he was invited to address the Second International College of Scientific and Social Campaigns Against Cancer at Brussels, Belgium, in September of that year. This was his first extended trip back to the Continent following his earlier study abroad when he studied in Austria, Germany and England. The Phoenix Gazette which reported something about his trip in the March 21, 1936 issue also stated that "Dr. Palmer is Chairman of the Cancer Control Committee of the Arizona State Medical Association. Other members are Dr. R. N. Looney, Prescott, Dr. R. N. Kennedy of Globe, Dr. Charles S. Kibler, Tucson and Dr. Joseph M. Greer, Phoenix."

He was an active supporter of organized medicine and served as president of the Maricopa County Medical Society, the Southwestern Medical Association, the Arizona State Medical Association, he was a charter member of the American College of Surgery and "Governor of the College for twenty-eight years from the State of Arizona." In 1958 he was awarded the distinguished service award by the American College of Surgeons as he "was honored as the originator of the College's Program of Hospital Standardization, first Fellow of the State of Arizona and a pioneer surgeon in that State, Governor of the College for twenty-eight years, and a devoted supporter of the ideals and activities for forty-five years".

One of the doctor's most lasting accomplishments, for which he is probably least known in the present generation of medicine, has to do with the establishment of Highway First Aid Stations. In an article titled, "Airway and Highway First Aid Stations", published in Surgery, Gynecology and Obstetrics, volume 62, pages 446 to 448 in 1935, he stated, "Since July 1931, I have laid my plans before many agencies for the establishment of First Aid Stations in the United States. In 1933, I interested the American Red Cross in setting up First Aid Stations on the highways. At that time they endeavored to sponsor the movement. Unfortunately, the general financial stringency at the time prevented them backing the movement to any extent. Today the American Red Cross is willing and anxious to establish First Aid Stations on both the highway and airways of our country. The officials at National Headquarters have just recently approved plans looking to the immediate establishment of stations along our main traveled roads and in emergency landing fields and airports. There are already seventeen First Aid and Life Saving Field Representatives of the Red Cross devoting their entire time to this work and there are 135 First Aid Stations operating now in the United States. Conservative estimates indicate that 1000 stations will be arranged before July 1, 1936."

He recommended that each station might keep on hand a "sufficient quantity of First Aid supplies such as is contained in the Red Cross Kits; a blanket, wooden splints, a Thomas-Murray upper extremity splint, a Keller-Blake lower extremity splint and a stretcher. There should also be two or more trained persons at administering First Aid of the injured and a method of transportation available at all times at each station." He commented, "the approximate cost of equipping a station is about thirty dollars," now thirty years hence about all we can get for that amount of money is a roll of bandage and a box of band-aids, no stretcher, no splints, no blanket. This paper he presented at a symposium on fractures before the Clinical Congress of the American College of Surgeons meeting in San Francisco in October 1935. As a point of interest, Mrs. Palmer states that many times on their Sunday afternoon rides through the country one of the children would point to one of these Aid Stations and exclaim, "there is one of Daddy's stations." Now from this early work and foresight of this pioneer Arizona physician our entire country is dotted with Red Cross Aid Stations, an idea first germinated in the fabulous Valley of the Sun.

In discussing "The Recent Advances in Surgery", in 1941, he was quick to perceive and recognize the value of the antibiotics but he was loath to discard some tried and true remedies. He stated, "some of the old remedies seem to have quickly been forgoten by younger physicians, zinc peroxide has proved effectual in the control of fetor, infection and pain in necrosing canceral lesions. Drainage is markedly lessened."

In the early 1920's, Dr. Palmer organized the Southwest Clinic and during the next decade he was associated in this practice of medicine with several physicians. Dr. Frank Milloy, gastroenterology — the first specially trained specialist in this field in Arizona; Dr. Charles Vivian, urology; Dr. Spencer Whiting, chest diseases; Dr. Elton R. Charvoz, obstetrics; Dr. Adams, gynecology; Dr. Dudley Fournier, obstetrics; Dr. Charles N. Ploussard, surgery.

He is remembered by one of these physicians as, "he was always very kind and helpful to the young physicians and resented very much the fact that other older physicians did not give the younger men a helping hand." Dr. Palmer was a stickler for precise, careful, surgical technique, he was also a stickler for promptness. Anyone who didn't appear promptly at the clinic for ten o'clock office hours was sure to hear of his tardiness before the day was over.

Another physician, who interned at St. Joseph's Hospital, remembers the prodigious work load which Dr. Palmer carried. He frequently did five to eight major surgical procedures a day. This interne made it his business to assist Dr. Palmer as frequently as possible — for Dr. Palmer was a meticulous, careful surgeon, and always striving to perfect his own technique and teach the younger men. Dr. Palmer took great pride in the fact that St. Joseph's Hospital was first in the State with an approved internship and a School of Nursing.

Mrs. Palmer relates that while her husband attended many post-graduate meetings and traveled extensively visiting clinics, while he was in Phoenix on the job, his work was continuous seven days a week. He usually tried to have Sunday afternoons free to spend with his family but other than this he was devoted to his practice. He related how his early years in Phoenix he slept in his office many times with his clothes on because his was the only way in which he could attend to all of his night calls and busy practice. Lo, how the years have changed the philosophy of young medical men, hence why we need a Directory to search for a physician to do night calls.

The professional life was complimented by his church and community work. He was a member of the Knights of Columbus and a prime mover in the development of St. Joseph's Hospital, both its physical plant and surgical standards.

In 1942 he was elected President of the Arizona State Medical Association and delivered his annual address in Prescott May 25, 1942. His topic was "Arizona Medicine in 1900 and Today" and this gives a good deal of his philosophy and not a little of the history of early Arizona medical times, the reader should consult it directly for its full impact. He stated, "we owe a deep debt of gratitude to the pioneer physicians of Arizona. They made possible the medical profession as we have it today. Prior to 1900, even in the best medical schools, training was insufficient; students memorized lectures from notes; there was little clinical instruction, no experimental training; even equipment was meager. Here in Arizona, physicians lacked hospital facilities and many pioneer physicians were located in remote places, they were unable to obtain assistance or consultants when needed. Those were the horse and buggy days, days with only paths, or at best poor roads to travel. In town many of the physicians made use of a bicycle for short distances and night calls, finding it less troublesome than hitching up his horse."

"The Arizona Pioneer Physician was a person of indomitable courage, striving to do his duty to his patients and to uplift the Medical Profession. This was the type I found upon my arrival April 1, 1900. They were friendly, but they were strong competitors. I was told that medical ethics prevailed in Arizona and must be observed."

"Forty-two years of practice, (1942), first in the Territory, and then within the State of Arizona, have taught me this if nothing more; life becomes worthwhile doing, not getting."

E. Payne Palmer, he saw: the tallow tip electrify to television; the saw horses traded for mechanical marvels in the surgical ampitheater; his cow town become a metropolis; some of his ranches acquire ribbons of concrete for screaming jets; his "aid stations" perch on the aprons of freeways and highways across the nation; and his program for hospital standardization adopted by the American College of Surgeons — now under different sponsorship — virtually the law of Hospital Land!

Yes to Doctor Palmer, this pioneer physician of Arizona, we owe a deep debt of gratitude!

JOHN W. KENNEDY, M.D.

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expand the reserves of fundamental knowledge

pinpoint projects so as to avoid duplication of effort

apply research to the economical functioning of correctional treatment

disseminate acquired information to the advancement of all fields concerned with crime and delinquency.

In wholehearted accord with this goal, the Rockefeller Fund, in December 1959, gave a grant of $41,900 to NPPA to set up this first national research and information center.

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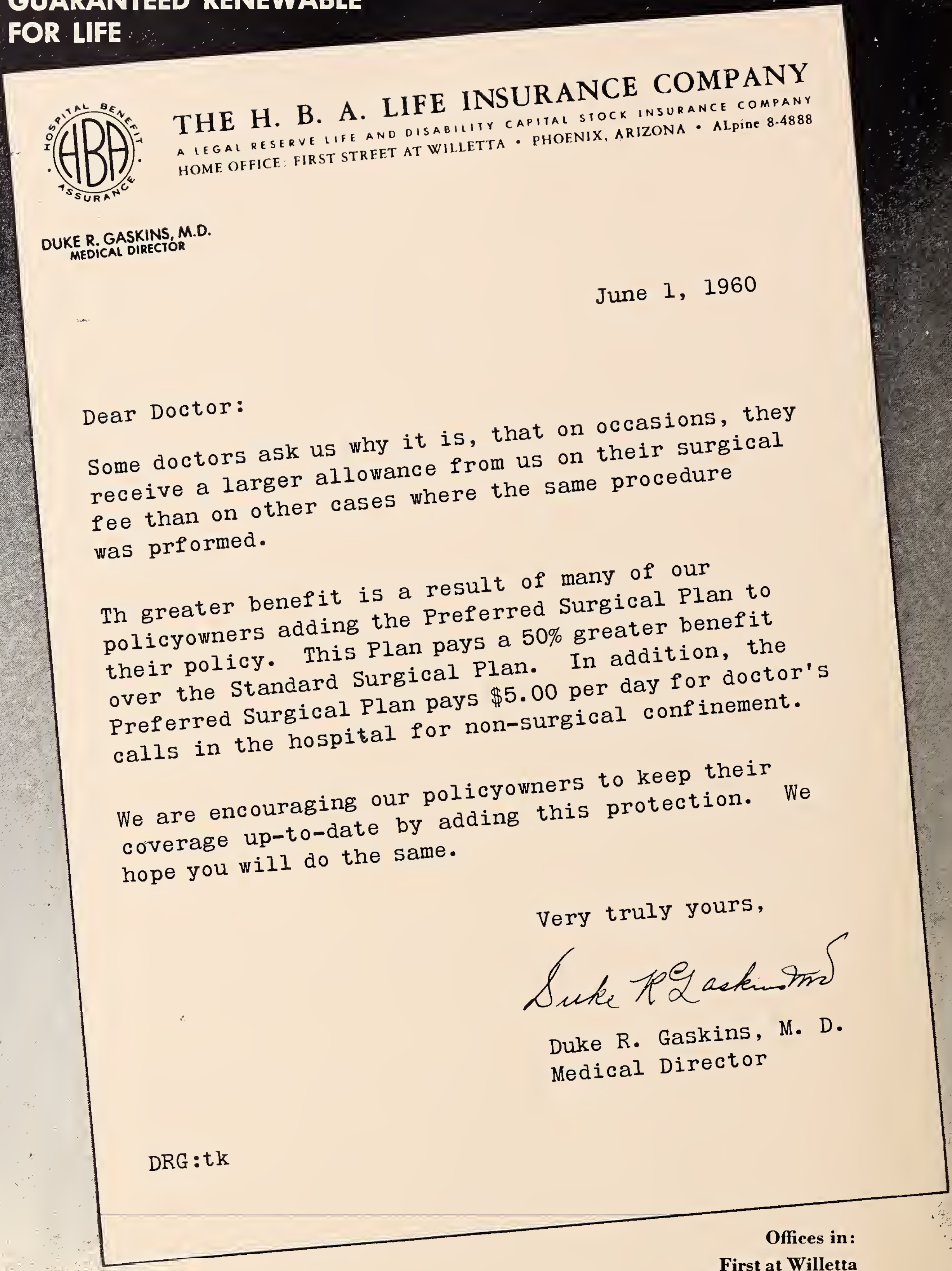

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HOSPITAL BENEFIT ASSURANCE HBA

DUKE R. GASKINS, M.D.
MEDICAL DIRECTOR

June 1, 1960

Dear Doctor:

Some doctors ask us why it is, that on occasions, they receive a larger allowance from us on their surgical fee than on other cases where the same procedure was prformed.

Th greater benefit is a result of many of our policyowners adding the Preferred Surgical Plan to their policy. This Plan pays a 50% greater benefit over the Standard Surgical Plan. In addition, the Preferred Surgical Plan pays $5.00 per day for doctor's calls in the hospital for non-surgical confinement.

We are encouraging our policyowners to keep their coverage up-to-date by adding this protection. We hope you will do the same.

Very truly yours,

Duke R Gaskins MD

Duke R. Gaskins, M. D.
Medical Director

DRG:tk

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Arizona Medical Association Reports

PRESIDENTIAL ADDRESS

Lindsay E. Beaton, M.D.

The following address, presented by Lindsay E. Beaton, M.D., President, on ascending to that office, is published herein verbatim for the benefit of the membership who were unable to attend the recently completed 69th Annual Meeting of The Arizona Medical Association.

Dr. Melick, Members of the Association, Honored Guests, no physician can be chosen President of his State Medical Association without feeling both gratified and unworthy. For one who practices my branch of our common science, the senses of honor and humility are compounded. It was not long ago that Sinclair Lewis in *Arrowsmith* called psychiatry "a plot against medicine." Yet here today a psychiatrist succeeds a surgeon as the nominal head of a major segment of American medicine, a sign that the specialty has won its place and that its advocates are respectable. I take my elevation to this esteemed and responsible office, therefore, not as a personal encomium, but rather as recognition of psychological medicine and of the men and women who serve it in Arizona. Nonetheless, my gratitude to my fellow physicians is unbounded for this signal, albeit undeserved distinction, and for this opportunity to be for a year, the spokesman, however untalented, of our Association.

As I have reread the presidential addresses of my predecessors, I have been struck with a unity of text, the pledge of medicine to care for the ill. This thesis is equally mine today. As each incoming President has applied his own particular discernment to writing a set of variations on this theme in discussing the needs and aspirations of our Association, you will perhaps excuse my turning in part to the insights of psychiatry and social psychology. If I become oracular, remember gratefully that the power of Delphic utterance descends on each President for this half hour only and never returns again.

I petition your attention this morning to the topic of the public image of the doctor, its delineation, past and present, the reasons for its evident alteration, and the truer portrait that may be substituted for it. No demonstration is needed to prove that the physician has found himself in a chillier climate of national opinion in recent years. Traditionally he was not only respected for his professional skills but beloved for his personal relationships with those for whom he cared. He was the accepted symbol of selfless devotion to duty. Today, he has undergone what often seems to him like systematic and studied deprecation. Beneath the rapturous platitudes about medicine with which we regularly beguile ourselves, let us note a hard fact: many people now think of us as men concerned first with personal gain and only secondly with the welfare of the sick. You will remember in a New York paper the cartoon of the doctor, with every part of his anatomy and paraphernalia labeled in acid commentary on his economic self-interest and callous indifference. In a recent issue of the Saturday Evening Post, that fine old organ of the left wing, an editorial equated alleged abuses in modern surgical practice with the immoralities that have lately marred the country's commercial life. There is no necessity to multiply the evidence. Every one of us is aware, from the jocular but biting references of friends and patients to our charges and our millions, of unflattering cynicism about our professional principles. Not only are we regarded in certain circles as venal, but to complete an ugly picture, attendant mercantile traits are ascribed to us. We are seen as snug, aloof from human suffering, too busy profiteering on illness to drive our Cadillacs out on house calls. We are accused of having formed a tight guild that blocks the development of new medical schools, deters the recruitment of young physicians, favors sterile specialism, and contests every social advance that mgiht offer better care to medically indigent groups, all in restrictive protection of our own vested financial interests.

To the physician this is more than a savage lampoon; in purple indignation he calls it a total falsehood, presumably perpetrated by Communists. Wrong as we find the description, we had best abandon ourselves neither to apoplexy nor paranoia but rather try to understand how it can possibly be seriously presented, and not alone by crackpots but by sincere critics. The rank and file vote their convictions in terms of images presented to them, not in terms of facts, which may be largely inaccessible to them. We probably have little to fear from accurate impressions of doctors, but if organized medicine does not do something to erase the prevalent caricature, it may deflect the destiny of the profession.

There must be many reasons for the currency of this grotesque public image of the physician. Some may be suggested without any pretensions of completeness and without the order of discussion necessarily being the order of significance. High among them is probably the change in the nature of medical practice from an intensely personal service to the objective and highly intellectualized approach demanded by the sophistication of modern biological theory. With all the enlightenment of modern psychiatry and the stress laid in every branch of medicine on correct psychological understanding, the links between doctor and patient are nonetheless bound to be less surely intimate. Nor can we expect the old unqualified admiration from the layman. He reads the Reader's Digest too, and he knows about research. He no longer necessairly feels that his health has been salvaged or his life saved by the physician's personal effort alone. Very often the practitioner is seen merely as a purveyor of scientific medical knowledge rather than, as in the past, its sole possessor.

Perhaps of equal importance, in the welfare state, is the growing popular expectation of medical care as an actual political due. Not only will a demand for insured access to health services be the next expansion of the drive for total security, but, preposterous as it may seem, the next freedom to be ordered in a Western democracy will perhaps be freedom from disease. The economist, John Galbraith, puts it flatly: "As health and physical hazard decline, men come to think of them as abnormal rather than normal afflictions." When any social desire is viewed as a right, some citizens are quite naturally very soon going to demur at paying individually for that right.

The concept of freedom from disease is itself a dangerous social illusion. The physician becomes practically aware of the threat when he sees himself continually menaced by malpractice litigation, the presumption for which is that failure to recover from illness must be the doctor's fault. This partly derives from our own propaganda about the "miracles" of modern medicine and the consequent anticipation of the populace. The legal doctrine of warranty, of guarantee of the product offered in the marketplace, has been applied to the manufacture of medications and may also be creeping into the practice of medicine. We suffer in the public eye for not being able to deliver the impossible.

Another reason, more speculative but perhaps more basic, for the change in regard for the physician may be that his conventional image, drawn from the past, has become an anomaly in the 20th Century. In Victorian America, the doctor was in a way the epitome of the virtues admired in his age. He was an undisguised individual in an epoch that respected individuals. Now he finds himself in an increasingly collectivistic society that substantially denies the values of inner moral direction and personal effort. In many ways, he no longer shares the common experience of many of his patients. His very learning has become complex and esoteric, more difficult to expound to the medically uneducated. This helps to explain the persistence of folk cures and the success of charlatans. Honey and vinegar are easier to understand than steroids. As a member of society, less than almost any other does the physician fit the pattern of the compliant organization man. He partakes little of the present-day conviction that a decision is better reached by a team of mediocrities than by a single able individual, that purpose must be a compromise of all points of view. It is true that one sees clinics, panels, "staffings", and other reflections in medicine of the "groupism" of the times, but eventually the patient must have his health problems appraised by his doctor and his medical affairs managed by that doctor. Also the physician remains hard-working, in a culture centered on leisure. As David Riesman and others have predicated, in an affluent society as work becomes less meaningful, less intense, and less essential, the role of leisure grows, and the individual becomes crucial not as a producer but as a consumer. But the physician's work remains full of meaning and gratification. He probably works longer and harder hours than anyone else in the community, and he is suspect as being different.

Finally, perhaps in the changing view of the doctor held by a mounting proportion of the public, there is some truth, reluctant as the admission would be in the mouths of most of us. The image is certainly false for the individual physician, but can we recognize it as a distortion mirroring the preoccupations of organized medicine? Perhaps our leadership has led us to a position of old guard inflexibility and has not been responsible enough in developing new adjustments of practice to social realities. Perhaps, as a fraternity, we have not been willing to acknowledge the place of the allied health vocations in the treatment of the sick, to concede the obvious fact that in an enormous and complicated democracy, the total care of the ailing cannot be the unassisted prerogative of the doctor. Perhaps, alienated from the commonalty by our altered relation, instead of becoming a professional elite, drawn from and cutting across every social stratum, at the service alike of beggar and banker, we have drifted into an upper class status identification that prevents us from recognizing the wishes and needs of the great mass of our patients. Perhaps, we have put unnecessary energy into securing economic advantage for ourselves.

So much for the distasteful set of premises. As we seek peace with the public, first of all we must fortify the grounds from which no retreat is possible, the bulwarks that protect medicine as a profession. A profession is a way of life that is based on a body of knowledge, transmitted by systematized instruction to its postulants, rigorously governed by its own standards, enduring through the individuals who comprise it, and entered for its inherent values and not first for individual profit. As medicine becomes subject to controls and modifications, as it inevitably will, these essences can never be sacrificed. Never can the doctors of America abandon to other dictates the content of the medical curriculum. They will retain this authority and delegate it only to their colleagues who specialize in education. Secondly, whatever social and economic solutions are finally affirmed for the problems of the care of the sick, they must be such as not to impair the physician's discretionary superintendence of his patient. The only appeal of a medical decision is to the doctor's peers, and the standards to which he is held are those of the profession itself. The freedom to set those standards and to judge adherence to them is the heart of medicine. Finally, it is socially disastrous to promote measures that impede the flow of candidates into medicine. The profession can never countenance its degradation into a hired trade, can never yield its moral and intellectual independence. This course would be the sure destruction of those incentives that draw able men into a demanding discipline, of the motivations that knit them into a dedicated company against disease.

As we turn to scrutiny of the task of repairing the image of the doctor, there are certain measures most firmly to be avoided. I take it as obvious, first of all, that we will not, with pious tongue in fat cheek, cry nostalgically for the old and pretend that we are still 19th Century leeches and should be adulated as such. In Lincoln's phrase, one cannot escape history, and this applies tellingly to medicine. We cannot restore the day of the country practitioner, beloved counsellor to the whole rural family, symbolized in the Fildes picture of the doctor sitting by the bed of the sick child. The era of helplessly holding the patient's hand has passed. Not that the tradition of prolonged attendance in the crucial hours of illness has lapsed. The night watch remains in the exchange transfusion, the post-operative vigil after cardiac surgery, the usc of the artificial kidney, the adjustment of a brittle diabetic, the quieting of an acutely disturbed depressive. However, for the youngster with pneumonia, antibiotics have replaced the doctor's sleepless hours. An injection of four hundred thousand units of penicillin in the right buttock not only stings, but understandably does not engender the same sense of gratitude. Yet we must practice our profession as it exists, making use of the skills of today. The very compassion and tolerance professed by psychiatry and consequential in every doctor‘s practice are a far cry from the managerial paternalism of an earlier and simpler age of medicine. The arts of psychological healing have grown too.

The second negative caution is against faith in publicity salvation through the ministrations of the mahatmas of Madison Avenue. The craft of public relations may not be outright deception, but it certainly is always guilty of the strategic ruse of omission, in the selection of facts favorable to the cause. This is at best a not very innocent game; it has no place in the serious concerns of health and illness. Since the time of Whitaker and Baxter, the American Medical Association has found itself bewitched by the dubious sorcery of press agentry. A knowing mass audience is likely to think that our advertising is as close to reality as the claims made for deodorants, depilatories, and dentifrices. As Chauncey D. Leake has so cogently written, in a letter to the Journal of the American Medical Association, "It would help if we could get away a bit from our devotion to the psychology of persuasion, to the more farsighted viewpoint associated with the psycology of responsibility."

Thirdly, I would have us eradicate from our official program the strident demand for the economic rights of doctors. Nothing labels us more pointedly in the public mind as being interested primarily or exclusively in personal gain. The people have read too long our defensive special pleadings about a favored income level; they have become derisively aware that the most widely read medical magazine in the United States is said to be "Medical Economics". They cannot be blamed for the suspicion, however mistaken, that in their reactions to medico-political isues physicians are upholding their industrial standing and not the necessary liberty of a profession to guard its purely professional functions.

Long ago the great Virchow thundered that medical instruction does not exist to provide individuals with an opportunity of learning how to make a living, but in order to make possible the protection of the health of the public. Paradoxically, once we stress this social covenant of medicine and put aside obsession with finances, we will be more likely to achieve personal security. There is nice irony in the obvious fact that the corporation executive who scoffs at the physician as a poor business man would be happy to trade incomes with him. It has been a sign of public affection that we are considered not shrewd in the ways of trade; we will be better off if we can regain this reputation of being concerned with patients, not pelf. Plainly the doctor does well in providing for himself and his family, but probably less due to his own acumen about money than to the gratitude of his patients. It is true that a majority of people value medical care more if they pay for it, a psychological hypothesis that has been an item of faith with psychiatrists and a great comfort to them, but fundamentally it is appreciation for an indispensable personal service that will always guarantee the physician an honored place in American society and, if we must, a financially secure one.

As a final prohibition, adjunct to the admonition to be less haunted by economic self-solicitude, organized medicine should be bidden to stop the kind of political activity that has resulted in the common belief that doctors are the spearhead of the far right wing. As citizens, as political units, each of us has license and obligation to speak his piece in the great debates of a frighteningly critical moment in history. Medicine as a social entity, however, attends only the non-partisan interests of health and must not become associated with any political party or social theory. There is potential disaster for the profession in identification with the ultra-conservatives. It is inevitable that health will be more and more a field of political promise. It is too tempting for the politician to offer the plum of someone else's toil, and both of the major parties, at this writing, are clearing their throats about governmenal sponsorship of health care for the aged. This represents political reality. Let us not risk our mission by allegiance to any economic philosophy. Our identification is with the sick. We should want it unmistakably understood that we serve the health purposes of the public, not the political purposes of the National Association of Manufacturers, any more than we would wish to support the similar purposes of the AFL-CIO. It is not a simple matter, of course, to separate a position about health from its social and economic parameters, for patently legislative proposals in many areas gravely bear on questions of disease. We can at least discount our own socio-economic prejudices, most of us being by background and status convinced conservatives, and try to make our concerted medical stands rest on the single touchstone of their benefits to the ill. The people at present largely believe that we do our lobbying and Washington infighting for personal economic and political motives, that we have fought the Forand Bill not because we think it would lead to poor medicine, but because we think it would squeeze our pocketbooks. The doctor's pocketbook is of little concern to the man in the voting booth. His health is.

This is not to stay that we do not have the right to speak out in self-interest in matters that concern us as a professional group where the welfare of patients is not involved, as for example on the inclusion of physicians under the Social Security Act. And most emphatically we do not abandon the battle against the real threats to medicine, but we must fight on proper grounds, for the right cause. There are plenty of valid scientific objections to certain proposals for changes in the character of health care. It is arguments of this sort that one would like to see proposed, not arguments about economic and social disputes in which our competence is minimal. The rational exception to bureaucratic power over medicine — by government, labor, or business — is for intellectual and professional reasons, not economic ones. Such control would put the care of the ill into the hands of managers and administrators who are indifferent and actually hostile to science. Not only might their immediate decisions about medical care be intolerable but, equally importantly, advances in medical science might be blocked. Bureaucratic obstructionism of this sort is on record, in the published testimony of men, such as Admiral Hyman Rickover, involved in branches of our defense establishment. On this basis we are skeptical that federal or state control could do other than impair medical care. It is unhappily easily proved that the government executive (or the business and labor executive) presumes to dictate on technical matters to the professional. Medicine cannot maintain its integrity or do its job if such circumstances pertain on a wide scale. It can and should be asserted that an organizational hierarchy is the natural foe of innovation, while discovery is the very pulse of medical science. Bureaucracy has shown itself intolerant of individual initiative, and the physician's integral responsibility is the heartblood of medicine. We also have the right to question whether it is possible to have state financing without state dictation, or business or labor financing without business or labor dictation. In a merchant culture it is accepted that he who pays the piper calls the tune. Finally, we can and should make the point that one goes slowly in destroying a professional edifice, whatever its flaws, that has provided the rooms in which such outstanding work has been done. To paraphrase Winston Churchill on the subject of democracy, private practice is obviously the worst possible way to take care of the sick until you look at the alternatives.

Even if we can bring about attitudinal changes in organized medicine, so that we are relieved of the miserable necessity of going steady with our own false image, there is yet more to be done. To coin a sparkling phrase, we need a positive approach, if the people are to have a chance to know us as we truly are. First, we need a set of explicit programs. Most accurately the problem is one of giving concrete formulation to convictions we have long held. Here it seems to me there is real hope and real progress. A fresh breeze is blowing through the halls of 535 North Dearborn Street. The American Medical Association, in addition to the unsung work of its scientific departments, is giving exact shape to the conceptions of America's doctors for medical management of the aged and rehabilitation of the handicapped. These programs will be at first received with some doubt in certain circles. All the more reason for us strictly to weed out of such projects any intimation of monetary self-interest or political aim. Just the sort of proposal I mean is the one on careers in medicine started by this Association last year under the imaginative guidance of Dr. Melick.

As a second affirmative action, one that might especially serve to erase those strokes in the false image that paint the doctor as class-conscious, aloof from the majority, and remote from the social questions of the day, it would be advisable if all physicians were to be prompted to engage in community activities. With charitable enterprise coming increasingly under the dominion of social agencies, with public or semi-public rather than private financing, the physician's direction is evermore urgently required. It is not only that a share in the supervision of philanthropy is an opportunity to influence such agencies in the adoption of proper policies that may affect medicine. From the point of view of the consideration of his public image, it will bring the doctor into initmate contact with all kinds of persons and problems and allow his sympathetic concern to serve an antidote for the slur of selfishness.

Thirdly, in his guardianship of health, the physician must realize that no longer is he the sole warden of the keep. The complexity of health problems has given rise to the many paramedical callings, from the university physiologist to the hospital aide. Here we have a dual and delicate task. First of all, we must accept authority over the *entire* health field. If we do not, someone else will, probably the government and we will find medicine only one of several disciplines in a public health empire. Secondly, we should receive workers in the paramedical areas as welcome recruits and fit them into the team. This is no subtraction from the scope of our practice. Rather is it an opportunity for extension of our stewardship. As the ultimately accountable individual, the doctor only insists that final medical decision be made by him, no matter what contribution other disciplines have made in providing information toward that decision. He should now let the public know once and for all that he has no desire to preempt and hoard all services to the ill for his own gain. Here in Arizona, with a rather small and happily close fellowship of physicians, the federated unity of the health professions could appropriately be the business of your Association in the oncoming year.

In the very last reckoning, it is what lies in the heart of the physician that will determine his authentic image in the public eye, if he will but show it openly. The means I have suggested will ring true only if they proclaim what doctors believe. It remains then to make sure that organized medicine becomes the voice of those beliefs. Through our own vigorous participation we must see that it expresses *our* desires and *our* ideals.

We have perhaps become distrustful of our own idealism; we live in an age of little faith. Yet, historically idealism is an inseparable ingredient of medicine. We derive from the priesthood, and people still expect us to act with a certain religious consecration. In this light the very criticism to which we are subjected is compliment, for it implies a sense of an ideal betrayed. Not entirely extravagantly the physician's personal experience can be likened to that of the Buddha, whose whole life was changed when he escaped the seclusion of his father's palace and rode through the countryside where he saw the corpse, the cripple, and the aged beggar. No doctor is the same after he has lived a while with death, illness, and the ravages of age and poverty. In the immediate human sense, as well as in the historical sense, medicine cannot escape its moral base for it rests on the only biologically unassailable purpose, the preservation of the members of the species. It is this origin that, psychologically, makes caring for the sick person an act of love. If it is not rendered in that emotion, it is not good treatment, for it then fails to tap what Gregory Zilboorg called the physician's "therapeutic intent", the need to cure. In return the physician is most repaid by his unequaled office, privileged beyond all men by his coveted and essential presence at the great crises of every life. More than any other man, he stands for the love we bear one another, and the responsibility we have for our brothers.

For the sake of our public image, but even more for the good of our souls, each of us needs periodically, to recognize unreservedly the idealism implicit in the physician's way of life, to rededicate himself to the purposes of medical practice and to divest himself of that which is irrelevant. If the doctor remains staunch in his trust, he need never fear for his rank in any form that society may take, and, more nobly, he will have discharged the duty to which he was called. In 1960 it is timely for the physician to renew in his personal credo that stern promise of the Hippocratic Oath, from which this address took its title. "Into whatever houses I enter," reads the Oath, "I will go into them for the benefit alone of the sick. In purity and in holiness I will pass my life and practice my Art."

1959-60 ANNUAL REPORT OF LEGISLATIVE COMMITTEE

During the current fiscal year to date it has been necessary to schedule but one meeting, which was held in Scottsdale, Arizona, January 10, 1960. This, of course, does not represent the total effort expended by your committee thus far during the second regular session of the 24th Legislature of the State of Arizona. Most of you, I am sure, realize the many hours that are devoted to conferences with individuals, groups and committees of both bodies of the Legislature in consultation requiring forbearance and fortitude in our endeavor to achieve the objectives sought. Tihs year has been no exception.

Your Legislative Committee considered the following matters and submitted its recommendations to the Board of Directors of this Association for its further deliberation and direction:

1. Recommended enactment of an amendment to Section 36-135, A.R.S. relating to public health, prescribing the salary of the Commissioner, establishing a range from $12,500.00 to $17,500.00, and setting forth qualifications for the position.

2. Recommended approval of an appropriation to the State Department of Health in the sum of $25,958.00, to complete the purchase and installation of necessary equipment and cabinet work, etc. to refurbish quarters in Tucson to accommodate the southern Arizona branch of the State laboratory.

3. Recommended amendment to Section 36-132 B, A.R.S., granting authority to the State Department of Health to enter into contracts with other governmental departments, agencies, private organizations, etc. for the purpose of providing additional professional or public health services to the State.

4. Recommended amendment to Section 36-105, A.R.S., to provide for the more expeditious handling by the State Department of Health of procedures dealing with abatement of public nuisances.

5. Recommended adoption of a memorial for presentation to the Arizona Corporation Commission urging consideration of the establishment of an increase in ambulance services fees on a comparative basis with other States; this problem to be taken to the Maricopa County Medical Society's Legislative Committee for further action; and that steps be taken to introduce a measure in the State Legislature similar to Section 21714 of the California Vehicle Code, referable to operation of ambulances in emergency service, requiring first aid certification of operator or attendant on duty therein.

6. Recommended to the Board reiteration of its previous stand opposing the use of fluoroscopic shoe fitting equipment in commercial stores

7. Referred for further study by counsel H.B. 62 introduced by Representative Nelson D. Brayton, M.D., this state legislative session, providing for the establishment of a Cancer Advisory Committee, pending further action by this Committee.

8. Reviewed the problem confronting doctors of Coconino County relating to treatment of civilian Civil Service employees and their dependents by military medical personnel at the Navajo Ordnance Depot hospital in Bellemont, Arizona, presently being investigated by another committee of the Association.

In the Congress of the United States H.R. 4700, known as the Forand Bill, is, without question, the most important piece of legislation currently being considered by the House Ways and Means Committee. If enacted into law, the Federal Government will control and administer medicine establishing a system of socialized medicine for a large segment of the population. It would initially provide a limited amount of hospital, surgical, and nursing home treatment for some 16 million people eligible for Social Security retirement and survivorship payments. Americans rejected socialized medicine overwhelmingly in 1950. Here it is again — this time under a different label. Political medicine is bad medicine and we must rally all forces at our command to again defeat such encroachment upon the high quality of medical care being administered the people today. From the national through the state to the "grass roots" county level, all-out effort is being exerted to again realize the defeat of this legislative effort. The officers and committee members of your Association are doing their part. The active support of this objective by every doctor of medicine is requisite to its accomplishment.

It has been my privilege and pleasure to again serve the membership of this Association in the capacity of chairman of its Legislative Committee. It has been a challenging and rewarding experience. To the members of this Committee, to the Board of Directors who have co-operated so fully, and to all my conferees who have responded so willingly, assuming their share of responsibility toward promotion of sound legislation for the good of all peoples, my sincere and warm thanks.

ADDENDUM

With adjournment of the 24th Legislature of the State of Arizona, Second Regular Session, the Legislative Committee is now in position to further report the results of activity throughout the state legislative session just concluded.

It is to be pointed out that the following two measures considered MUST legislation which this Committee was directed to actively support, again we were successful in having them enacted into law following signature of the Governor, they having passed both the House and Senate:

H.B. 104 — An Act relating to Public Health; providing for an increase in the compensation of the Superintendent of the State Hospital ($12,500 - $15,000).

H.B. 153 — An Act relating to Public Health; prescribing the salary of the Commissioner of Public Health ($12,500 - $15,000 amended to $16,500).

Listed below are those measures in which the Association had an interest, followed daily and were likewise enacted into law:

S.B. 49 — An Act relating to Non-Profit Corporations; providing for the formation and number of Directors thereof — exempting specified number (3 - 25) applicable to non-profit corporations organized under the provisions of this Article (Sec. 10-451) for charitable, religious, educational or scientific purposes. (Emergency clause).

S.B. 99 — An Act making a supplemental appropriation to the State Department of Health for the State Tuberculosis Sanatorium ($10,000) supplementing the personal services and other current expenditures line items in the budget to June 30, 1960 (Emergency) Amended to $5,000.

S.B. 109 — An Act making an Appropriation for Planning and Construction of a Tuberculosis Sanatorium ($50,000).

S.B. 166 — An Act making an Appropriation to the State Department of Health ($25,958) to complete purchase and installation of necessary equipment, etc., for Southern Arizona Branch of the State Laboratory.

H.B. 145 — An Act relating to Public Health; defining tuberculosis person; providing for assistance for care or treatment of tuberculosis.

H.B. 226 — An Act relating to Narcotics; defining narcotic drugs to include new drugs of a natural or synthetic nature; prescribing those preparations exempted.

The following bills in which the Association did not specifically give direction were studied and followed daily by your Committee; however, they "died" in either the Senate or House; consequently, they were not enacted into law:

S.B. 81 — An Act relating to Taxation; exempting food products, medicine and water from the Transaction Privilege Taxes.

S.B. 210 — An Act relating to Dispensing Opticians; prescribing qualifications of applicants; prescribing unlawful acts.

S.B. 217 — An Act relating to Chiropody; providing for reciprocal licenses.

H.B. 4 — An Act relating to Public Health; prescribing powers and duties of the State Department of Health relating to Radiation protection.

H.B. 32 — An Act relating to Taxation; prescribing exemptions to the Education Excise Tax (including Drugs).

H.B. 40 — An Act relating to Occupational Diseases and Disability.

H.B. 41 — An Act relating to Public Health and Safety; creating a state committee for the purpose of correlating results of county control boards organized to study problems of Air Pollution.

H.B. 42 — An Act relating to Public Health and Safety; prescribing the method of reporting a contagious disease (V.D.)

H.B. 62 — An Act relating to Public Health; providing for the establishment of a Cancer Advisory Committee.

H.B. 86 — An Act relating to Taxation; exempting food products, medicine and water from Transaction Privilege Taxes.

H.B. 144 — An Act making an Appropriation to the State Department of Health for the establishment of a state-wide preventive mental health program ($6,000).

H.B. 159 — An Act relating to Taxation; providing for exemption of medicines from provisions of Transaction Privilege Taxes.

H.B. 174 — An Act relating to Premarital Examinations and Marriage Licenses; authorizing acceptance of Blood Bank or Red Cross certificate in lieu of Certificate and Laboratory Statement prescribed by law.

H.B. 187 — An Act relating to Crimes; prescribing punishment for advertising to produce abortion; removing punishment for advertising to prevent conception.

H.B. 209 — An Act relating to Mental Health; providing that definition of "Mental Illness or Mentally Ill" shall include addiction to alcohol.

H.B. 234 — An Act relating to Professions and Occupations; establishing a State Department of Occupational Licensing, etc.

H.B. 242 — An Act relating to the State Prison; providing for a full-time doctor of medicine; a full-time psychiatrist and a full-time director of education and vocational rehabilitation, etc.; providing for an appropriation.

H.B. 257 — An Act relating to Dispensing Opticians; prescribing qualifications of applicants; prescribing unlawful acts.

H.B. 265 — An Act relating to Motor Vehicles; providing qualifications for certain ambulance drivers and attendants, etc.

H.B. 273 — An Act relating to Taxation; exempting food products, medicine and water from the Transaction Privilege Taxes.

H.B. 285 — An Act relating to Public Health and Safety; providing for the declaration of public nuisances dangerous to public health; prescribing procedure for obtaining compliance with cease and desist order.

H.M. 6 — A Memorial requesting the Congress of the United States to extend the application and benefits of Old Age and Survivors Insurance and Unemployment Compensation to all citizens.

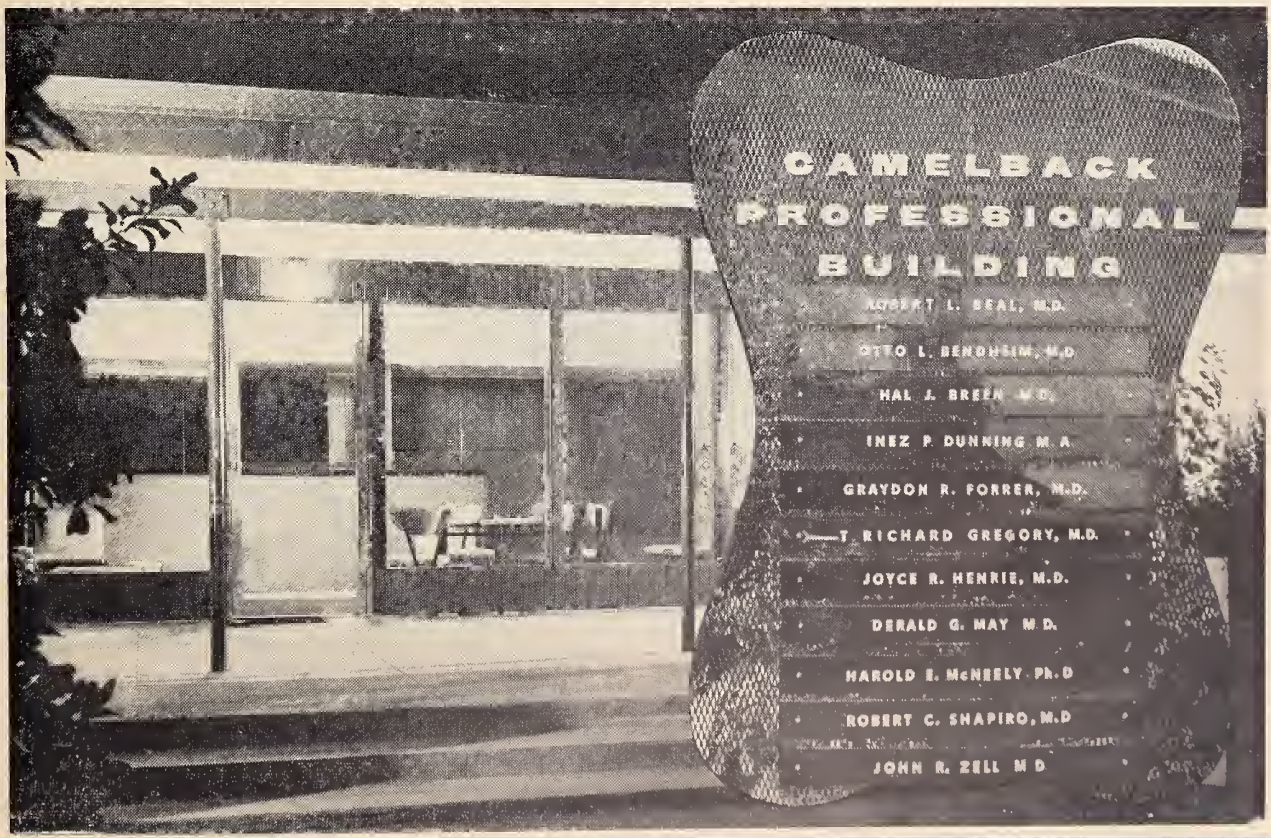
There were a number of other bills of interest, dealing with various health and welfare agencies, which were observed and followed throughout the session.

All in all, your Legislative Committee concluded another busy legislative session achieving the specific goals sought and directed by the Board of Directors. To those of our members called upon to render advice and assistance who so willingly and freely gave of themselves in this necessary teamwork endeavor, we express our most grateful appreciation and thanks.

Respectfully submitted,

Reed D. Shupe, M.D.

Chairman — Legislative Committee



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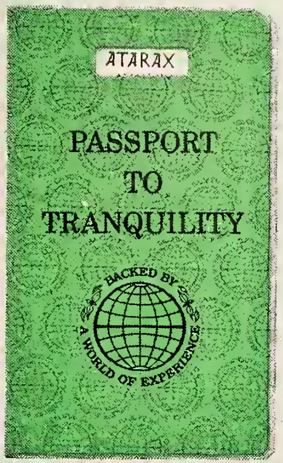

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IN ELDERLY PATIENTS well tolerated by debilitated patients	"...seems to be the agent of choice in patients suffering from removal disorientation, confusion, conversion hysteria and other psychoneurotic conditions occurring in old age." Smigel, J. O., et al.: J. Am. Geriatrics Soc. **7**:61 (Jan.) 1959.	Settel, E.: Am. Pract. & Digest Treat. **8**:1584 (Oct.) 1957. Negri, F.: Minerva med. **48**:607 (Feb. 21) 1957. Shalowitz, M.: Geriatrics **11**:312 (July) 1956.
IN ALLERGIC PATIENTS useful adjunctive therapy for asthma and dermatosis; particularly effective in urticaria	"All [asthmatic] patients reported greater calmness and were able to rest and sleep better...and led a more normal life.... In chronic and acute urticaria, however, hydroxyzine was effective as the sole medicament." Santos, I. M., and Unger, L.: Presented at 14th Annual Congress, American College of Allergists, Atlantic City, New Jersey, April 23-25, 1958.	Eisenberg, B. C.: J.A.M.A. **169**:14 (Jan. 3) 1959. Coirault, R., et al.: Presse méd. **64**:2239 (Dec. 26) 1956. Robinson, H. M., Jr., et al.: South. M. J. **50**:1282 (Oct.) 1957.
IN HYPEREMOTIVE ADULTS does not impair mental acuity	"...especially well-suited for ambulatory neurotics who must work, drive a car, or operate machinery." Ayd, F. J., Jr.: New York J. Med. **57**:1742 (May 15) 1957.	Garber, R. C., Jr.: J. Florida M. A. **45**:549 (Nov.) 1958. Menger, H. C.: New York J. Med. **58**:1684 (May 15) 1958. Farah, L.: Internat. Rec. Med. **169**:379 (June) 1956.

SUPPLIED: Tablets, 10 mg., 25 mg., 100 mg.; bottles of 100. Syrup (10 mg. per tsp.), pint bottles. Parenteral Solution: 25 mg./cc. in 10 cc. multiple-dose vials; 50 mg./cc. in 2 cc. ampules.

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Medical Society of the United States and Mexico

MEETING ANNOUNCEMENT

Los planes para la próxima convención de la Sociedad Médica de los Estados Unidos y México comienzan a tomar forma. La reunión se celebrará en Guadalajara el 8, 9, y 10 de noviembre y en Mazatlán el 11 y 12.

El asunto del transporte ha estimulado gran interés. El viaje por ferrocarril en ocasión de la convención en Guadalajara en el '58 tuvo tanto éxito, que se considera esta vía una de las más populares. El prestigio del Dr. Ignacio Chavez, nuestro presidente-electo, y su íntima relación con el ferrocarril harán posible, con toda seguridad, un viaje comodísimo desde Nogales. Se nos ha informado que de Guadalajara a Mazatlán hay un tren que hace el viaje de noche y llega a su destino a la mañana siguiente. Es muy posible que, para este tramo, se organice un tren especial para nuestro grupo. Ya nos hemos comunicado con un agente de viajes para que investigue la cuestión del transporte por vía aérea, an especial la posibilidad de fletar un avión desde Tucson o Phoenix.

Con toda probabilidad se creará una comision en Guadalajara y otra en Mazatlán, que se harán cargo de separar alojamiento para los señores congresistas y sus familias.

Dentro de dos meses intentamos enviar cuestionarios a los socion norteamericanos, solicitando una expresión de su intención de asistir a la convención, para establecer un cálculo bruto del número de congresistas que se espera asistan.

Mientras tanto, se solicita de aquellos socios que así deseen, se comunique con nuestro secretario americano, el Dr. M. A. Carreras, 130 South Scott, Tucson, Arizona, si se interesan en presentar alguna ponencia científica en la próxima convención.

JEF

Plans are beginning to take shape and jell again for the forthcoming meeting of the Medical Society of the United States and Mexico, to be held in Guadalajara, Jalisco and Mazatlan. Sin., on November 8 to 12 this year. As was previously announced, the Guadalajara portion of the conclave will take place on November 8, 9 and 10, while the 11 and 12 will be spent in Mazatlan.

The matter of transportation has stimulated much discussion so far. The trip by train to Guadalalajara in 1958 was so successful that this mode of transportation is considered one of the most popular. The close connection of Dr. Ignacio Chavez with the Mexican railroad will bring about, we are sure, a most satisfactory and comfortable trip from Nogales, Sonora. We are told that an overnight trip will bring the train from Guadalajara to Mazatlan. One could even guess that a special train might be set up for our group. We have contacted a travel agent to do some spade work in the matter of air transportation and to look into the possiblity of chartering an aircraft, perhaps even all the way from Tucson or Phoenix.

There will be, in all probability, a central committee in Guadalajara and one in Mazatlan, in charge of lodging reservations, with graduated choices.

By summer we will send out questionnaires to the American members solely to obtain a rough estimate of the number to be expected.

Meantime, anyone with an interesting paper to present is cordially invited to notify our American secretary, Dr. M. A. Carreras at 130 South Scott, Tucson, Arizona, at the earliest opportunity.

Juan E. Fonseca, M.D.

The Scientific Exhibit

AMA Clinical Meeting, Washington, D.C.

November 28 - December 1, 1960

Application forms for space in the Scientific Exhibit at the Washington, D.C. Clinical Meeteing of the American Medical Association, November 28 to December 1 are now available. They may be procured by writing directly to Charles H. Bramlitt, M.D., Director, Department of Scientific Assembly, American Medical Association, 535 N. Dearborn St., Chicago 10, Illinois. Applications close on August 1.

The "Hull" award will be presented for th first time at this meeting to the best exhibit on a scientific subject which has not been previously shown at a medical meeting. The award will consist of a gold medal and an honorarium of $250. The winning exhibit will be approved for showing in the Scientific Exhibit at the 1961 Annual Meeting of the AMA which will be held in New York City.

Dr. Thomas G. Hull will personally present the award to the recipient.

Topics of Current Medical Interest

ARIZONA POISONING CONTROL INFORMATION CENTER

USE OF BURNED TOAST AS A SUBSTITUTE FOR ACTIVATED CHARCOAL IN THE "UNIVERSAL ANTIDOTE"

The use of activated charcoal has been widely recommended as an emergency first aid measure in the treatment of poisoning from certain chemical agents. A preparation, known as the "universal antidote", containing 2 parts of activated charcoal, 1 part of magnesium oxide, and 1 part of tannic acid is commonly employed. The charcoal absorbs many alkaloids and other chemical agents such as phenol, mercuric chloride, and salicylates; magnesium oxide neutralizes acids without evolution of carbon dioxide gas; tannic acid precipitates certain alkaloids, glycosides, and heavy metals(1,2). In the first aid treatment of poisoning from strychnine, the oral administration of the "universal antidote" in water is considered as the safest procedure prior to premedication of the victim with barbiturates(3).

As a public service, some pharmacists prepare the "universal antidote" and distribute it *gratis* to patrons with an explanation of how and when to use it in cases of poisoning in the home. The preparation is also available commercially in many pharmacies (e.g. Res-Q). However, in many cases of poisoning in which the "universal antidote" is indicated as a first aid measure, the preparation is not available in the home. The use of substitutes for the activated charcoal, magnesium oxide and tannic acid in "universal antidote" has been suggested, namely, burned toast, milk of magnesia, and strong tea, respectively (2,4,5,6). The administration of burned toast has been specifically recommended in the treatment of strychnine poisoning in children (6). Athough milk of magnesia and tea may be considered as useful alternates in the "universal antidote" formula, the substitution of burned toast in place of activated charcoal appears unjustified.

Lucas(1) has pointed out that the charcoal used in the treatment of acute poisoning "must be especially activated and that substituting ordinary charcoal or burned toast is folly." The extent of adsorption of a substance by charcoal is dependent both on the development of a large surface area in the charcoal and a conditioning or activation of its surface. In the manufacture of activated charcoal these properties are acquired by subjecting organic material (e.g. bone, blood, etc.) to high temperatures in the absence of oxygen (destructive distillation) and by treating the residue with an activating agent such as zinc chloride at high temperatures. Charcoal for medicinal use is also washed with acid and water to remove any inorganic matter that may be present(7).

Lehman(8) has provided convincing evidence that burned toast is of no practical value as a substitute for activated charcoal in the "universal antidote". He compared the adsorptive capacity of 5 Gm. of pulverized burned toast with 1 Gm. of activated charcoal N.F. X in accordance with the requirements of the United States Pharmacopeia (U.S.P.)(9). In this test, the U.S.P. requires that 1 Gm. of activated charcoal adsorbs completely 100 mg. of strychnine sulfate from 50 ml. of water after 5 minutes of shaking with charcoal. Upon completion of this procedure, he measured the degree of adsorption by determining the median lethal dose (LD_{50}) of the filtrates by intraperitoneal injection in mice. The LD_{50} of the filtrate from the burned toast-treated strychnine sulfate solution was not significantly different from that of the control strychnine sulfate solution. The filtrate from activated charcoal-treated strychnine sulfate solution showed no toxicity.

It is important that only activated charcoal of a high standard medicinal quality be used in the treatment of acute poisoning, and it should meet the U.S.P. requirement for adsorptive power. Andersen(10) emphasized this point when he compared the adsorptive capacity of 2 different commercial activated charcoal preparations for several chemical agents and found one of the preparations to be one-half as effective in adsorptive power as the other charcoal preparation. It should also be emphasized that activated charcoal must be preserved in well-closed containers. Because of its adsorbent power, it should never be kept exposed to the air. It will become unfit for use if subjected to the atmosphere of a laboratory or pharmacy(11).

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STATISTICS OF 79 POISONING CASES IN ARIZONA DURING MARCH 1960

AGE:

73.4% involved under 5 year age group	(58)
2.55% involved 6 to 15 year age group	(2)
10.1% involved 16 to 30 year age group	(8)
5.1% involved 31 to 45 year age group	(4)
6.3% involved over 45 year age group	(5)
2.55% not reported	(2)

NATURE OF INCIDENT:

81.0% accidental	(64)
15.2% intentional	(12)
3.8% not reported	(3)

TIME OF DAY:

31.65% occurred between 6 a.m. and noon	(25)
27.85% occurred between noon and 6 p.m.	(22)
15.2% occurred between 6 p.m. and midnight	(12)
5.1% occurred between midnight and 6 a.m.	(4)
20.2% were not reported	(16)

OUTCOME:

98.7% recovery	(78)
0.0% fatal	(0)
1.3% unknown	(1)

CAUSATIVE AGENTS:

	Number	Percent
Internal Medicines		
Aspirin	25	30.2
Other Analgesics	4	4.8
Barbiturates	7	8.45
Antihistamines	1	1.2
Laxatives	0	0.0
Cough Medicine	2	2.4
Tranquilizers	3	3.6
Others	10	12.05
Subtotal	52	62.7
External Medicines		
Liniment	0	0.0
Antiseptics	0	0.0
Others	1	1.2
Subtotal	1	1.2
Household Preparations		
Soaps, Detergents, etc.	0	0.0
Disinfectants	2	2.4
Bleach	6	7.3
Lye, corrosives, drain cleaners	3	3.6
Furniture and floor polish	0	0.0
Subtotal	11	13.3
Petroleum Distillates		
Kerosene	1	1.2
Gasoline	3	3.6
Others (lighter fluid)	1	1.2
Subtotal	5	6.0
Cosmetics	1	1.2
Pesticides		
Insecticides	1	1.2
Rodenticides	1	1.2
Others	0	0.0
Subtotal	2	2.4
Paints, Varnishes, Solvents, etc.	4	4.8
Plants	1	1.2
Miscellaneous	4	4.8
Unspecified	2	2.4
Subtotal	11	13.2
TOTAL	83*	100.0

*The total number of causative agents exceeds the actual number of poisoning cases since in certain individual poisoning incidents more than one agent was involved.

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TUCSON MULTIPLE SCREENING PROGRAM

Arizona State Department of Health
C. G. Salsbury, M.D., Commissioner

INTRODUCTION

A multiple detection screening program conducted by the State Department of Health and local health departments, and sponsored by county medical societies, has been carried on in Arizona for the past three years. This program has been responsible for uncovering many new cases of diabetes, tuberculosis and syphilis in all areas of the state. Probably the most successful of these programs was the one conducted in Tucson last December.

The first time these units visited Tucson was at the Pima County Fair in 1957. Inclement weather and a breakdown of the testing equipment limited the number of tests taken so that although several cases were returned to treatment, no new cases of diabetes were found. The next visit was during Diabetes Week in November, 1957. At this time 725 people were tested, twelve (12) cases were returned to treatment and two (2) new cases were found. The multiple screening units were again in Tucson during Diabetes Week in 1958. This time the Diabetes Committee of the Pima County Medical Society took over the publicity of the program. An excellent job was done which resulted in 925 blood samples taken. Seven (7) new cases were discovered and many were returned to treatment. Only one (1) case was not brought to diagnosis and this was a tourist from out of stae. Results of the tests were sent to the physician of this person, but we have never received the results of any follow-up work on the case.

THE PROGRAM

With two years experience in sponsoring and promoting a diabetes screening program, the Diabetes Committee of the Pima County Medical Society was now in a position to put on a more extensive campaign during National Diabetes Week of 1959. The Tucson Diabetes Screening Program was conducted two weeks after Diabetes Week on December 7-18, 1959. This committee, under the leadership of Marguerite Williams, M.D., took over the entire direction of the program. The city was studied for the best possible testing locations and four sites were selected. The Diabetes Committee organized and presented a two-week pre-testing educational program during Diabetes Week to inform the public about the health screening services to be offered and to motivate them to go visit the locations for the screening tests. The publicity and educational program was carried to the people via the use of the press, radio and television. Diabetes publicity material was supplied by the American Diabetes Association and adapted to local use. Several of the members of the Diabetes Committee of the Pima County Medical Society appeared on local television and radio stations as part of the educational phase of the program. Movie trailers were distributed to the twenty-four motion picture theatres as part of the publicity campaign. The local newspapers gave extensive coverage to the program both before and during the actual testing period. This publicity was so effective that the screening units were swamped during the entire testing period. At the opening of the units in the morning long lines of people would be waiting for their screening tests. By evening, the testing lines were so long that many had to be turned away and asked to return the next day.

The diabetes tests were performed using the automatic Hewson Clinitron, which screens at the 130mg% level using the Wilkerson-Heftmann blood sugar determination method. It is possible to do between fifty (50) and one hundred (100) blood samples per hour by this method. All persons who screened positive on this test were contacted personally and informed of the results of their tests, and given the opportunity to have a confirmatory retest under controlled conditions.

The retest was drawn from the person one hour after they had eaten a moderately high carbohydrate meal. These blood samples were processed in the State Health Department Laboratory using the Folin-Wu quantitative blood sugar method. Blood sugar retest readings of 170mg% level and above were considered positive, requiring further diagnostic evaluation by the private physician. Persons who had positive retests were referred to their private physician for further study. A copy of the "Arizona Diabetes Follow-up Sheet" was sent to the physician, with the results of the retest entered on this sheet. The physician was instructed by an accompanying letter to return the form when the diagnosis was completed. In cases where the retest reading was very high, the physician was notified by telephone, and the "Follow-Up Sheet" sent to him later. These unusually high cases were also contacted by telephone, when possible, and urged to see their physician at once.

ARIZONA STATE HEALTH DEPARTMENT
TUCSON SURVEY
Diabetes Screening Test
December 7-18, 1959

Table I	**Male**	**%**	**Female**	**%**	**Total**	**%**
Total Screened	995	100.0	1657	100.0	2652	100.0
Total Positive Screenees...	26	2.6	38	2.3	64	2.4
Table II						
Positive Screenees Retested	16	61.5	31	81.6	47	73.4
Positive Screenees **Not** Retested For Any Reason...	10	38.5	7	18.4	17	26.6
Table III						
Positive Screenees Retested at 170mg% or above	11	42.2	15	39.5	26	40.6
Positive Screenees **Not** Retested For Any Reason...	10	38.5	7	18.4	17	26.6
Total Referred to Physician.	21	80.7	22	57.9	43	67.2
Table IV						
Follow-Up Reports From Physicians						
New Cases	6	23.1	14	36.8	20	31.3
Not Diabetic	5	19.2	—	—	5	7.8
Previously Known Diabetics.	8	30.8	7	18.4	15	23.4
Ne Report Received from Physician	2	7.6	1	2.7	3	4.7
Total Referred to Physician.	21	80.7	22	57.9	43	67.2

Table I—Percentage figured on number of persons having screening test
Table II, III and IV—Percentage figured on number of positive screenees

ARIZONA STATE HEALTH DEPARTMENT
TUCSON SURVEY
December 7-18, 1959

Table V	**Male**	**Female**	**Total**
Total Blood Tests Taken For Serology	995	1657	2652
Total Positive Screenees	18	22	40
Disposition of Positive Serology			
Brought To Treatment	3	4	7
Returned To Treatment	—	1	1
Adequate Treatment	10	5	15
Not Infected	3	3	6
Other Disposition	2	4	6
No Disposition	—	5	5
Table VI			
Total X-Rays Taken	993	1461	2394
Total TBC And Suspects	20	16	36
Total Other Pathology	38	37	75

Dispositions are not completed on positive tuberculosis and other pathology.

RESULTS

A total of 2,652 blood samples were taken (See Table I). Of these, sixty-four (64) or 2.4% reacted positive to the diabetes screening test. The positivity rate was slightly higher for the males than the females, but not significantly so.

Table II shows that forty-seven (47) of the sixty-four (64) positive screenees were retested using the Folin-Wu quantitative test. Of the seventeen (17) positive screenees not retested, fifteen (15) were known diabetics and as such were not retested. It was the policy of the testing team never to test a known diabetic unless specifically asked to do so by the patient's physician. However, many times the patient would not correctly answer the question "Have you ever been diagnosed or treated for diabetes?" The field investigator would discover this information later on visits to positive screenees. The other two patients, who were not retested by the screening team, preferred to go directly to their private physician for confirmatory retests.

Table III shows that twenty-six (26) of the forty-seven (47) positive screenees retested showed blood sugar levels of 170mg% or more. All these patients were referred to their physicians for further evaluation. The twenty-one (21) positive screenees whose blood sugar levels were under 170mg% were informed that they may be in a potential diabetes group and that it would be well to see their physician and take his advice as to whether or not they should have periodic examinations for diabetes in the future. Physicians were sent a copy of all retest readings.

Table IV represents the referral and disposition of total positive screenees retested at 170mg% or above, and positive screenees not retested for any reason. Of the forty-three (43) persons referred to physicians for diagnostic evaluation, twenty (20) were subsequently diagnosed as new cases of diabetes. Follow-up activity has been completed on all except three of the positive reactors. This represents a new high in a screening and referral program.

Table V is a statistical breakdown of blood tests taken for serological study. Only one sample of blood is drawn at the time of screening, this sample is used for both the RPR test for syphilis and the screening test for diabetes.

Table VI shows the total number of x-rays taken and the positive findings. Follow-up has not been completed on positive findings as of this date.

SUMMARY

The Diabetes Committee of the Pima County Medical Society had experience sponsoring diabetes screening programs during Diabetes Week in 1957 and 1958. They put this experience to good use during Diabetes Week in 1959. They took over the direction of the screening program conducted at this time in conjunction with the State Department of Health and the Pima County Health Department. The publicity before and during the screening program was so skillfully handled that testing teams were swamped with people wanting blood sugar tests. A total of 2,652 blood samples were drawn. This resulted in sixty-four (64) positive screenees with twenty (20) new cases of diabetes being discovered and fifteen (15) other cases being returned to treatment. Follow-up work has been completed on all except three positive reactors. This represents a new high in a screening and referral program.

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Reprints

An Analysis of Effects of Nuclear Attacks on Tucson and Phoenix*

James E. McDonald, Ph.D.
Institute of Atmospheric Physics,
University of Arizona, Tucson

INTRODUCTION – The problem of worldwide fallout of radioactive fission products from peacetime nuclear bomb tests has, in recent years, received both careful scientific attention and wide public discussion. It is remarkable that the vastly more serious problems that would arise in the event of actual nuclear war have, by comparison, received only slight scientific notice and almost no public discussion. The problems confronting a population under nuclear attack are exceedingly complex scientific problems that will only be grasped by the public at large after they have been analyzed and repeatedly interpreted to the public by many scientists.

But even when given predictions based on theoretical damage calculations such as those to be presented here, the layman will probably not immediately accept the dire implications. The person who has not himself carefully traced through the inexorable sequence of physical processes initiated by detonation of a nuclear weapon and who is not himself accustomed to drawing quantitative inferences from theoretical or semi-theoretical arguments is all too likely simply to reject the nuclear attack inferences as unpleasant speculations or to pass them off with some superficially fatalistic remark. This likelihood makes it all the more urgent that more scientists perform an interpretive role in what is a vitally important educational program. No matter how viewed, it is indispensable that all members of the public be made much more clearly aware of what can happen to them in event of nuclear war. The present analysis of effects of nuclear attacks on two Arizona cities is chiefly aimed at the intermediate goal of providing members of the Arizona scientific community with reference data that might prove useful to them in carrying out this interpretive function whenever opportunity arises.

As will be made clear below, there are a number of regional characteristics that make survival in Arizona a distinctly different problem from that of survival in other geographical areas under nuclear attack. On the other hand, many of the basic bomb phenomena that pose these problems will be essentially the same for Arizona as for any other area. Quantitative information on high-yield bomb phenomena has recently been made available through publication by the United States Atomic Energy Commission of its report, *The Effect of Nuclear Weapons* (AEC, 1957). This report has been my principal source of bomb-effect data in preparing the present analysis. Scientifically trained persons will find it very informative; but I would fear that the layman could not fully develop from it the image of bomb destruction that lies latent in many equations, graphs, and nomograms.

In addition to the above main reference, a very useful supplementary discussion, particularly informative on physiological and genetical

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*Reprinted from the Journal of the Arizona Academy of Science, Volume 1, No. 2, October, 1959.

topics, has been published still more recently by the Government of India (India, 1958). Beyond these two major references, one finds only a handful of scientific papers on the present subject, a measure of the dangerously limited attention that has thus far been given to the question of the prospective nature of nuclear warfare.

Never before in man's history have questions of the detailed mechanics of warfare been so intimately the concern of the civilian population. Never before have such questions been interwoven so tightly with complex technical matters.

DISCUSSION OF ASSUMPTIONS – It will be assumed here that the two most likely targets of nuclear attack in Arizona are the Tucson and Phoenix areas. Ground zero, the point of hypothetical bomb detonation, will be taken to be within the boundaries of Davis-Monthan AFB for the case of Tucson, but will be put in the downtown area in the case of Phoenix. More specifically, Tucson ground zero will be set at the intersection of Ajo Way and Swan Road extended, while Phoenix ground zero will be arbitarily set at Central and Van Buren. Granting target value to such points, it remains obvious that ballistic errors could shift ground zero several miles in any direction, but this probability will not be considered in the following discussion.

It will be assumed that an enemy weapon of 20 MT yield (1 MT = explosive energy equal to that of 1 megaton TNT) is delivered to each target. In support of the reasonableness of this assumption the following points may be noted: (1) A weapon of 20 MT yield is adopted in the Indian analyses (India, 1958) as the "nominal high-yield weapon." (2) In the 1957 Holifield Subcommittee discussions of Operation Sentinel, an analysis of a hypothetical nuclear attack on this country, it was reported that weapons of 5, 10, and 20 MT were assumed to be delivered to selected target cities, suggesting that capability of delivery of a 20 MT weapon must now be reckoned with (Joint Com. on At. Energy, 1957, Pt. 1, pp. 135-141). Hence Tucson, at least, must be regarded as a potential 20 MT target because it is the site of one of only thirty-odd continental SAC (Strategic Air Command) bases, and it is widely recognized that SAC bases are now highest-priority targets for a would-be aggressor. (3) Release of 20 MT requires fission of only about a ton of missile materials. This much net fission might reasonably be expected (India, 1958) to result from packaged weapons weighing, say, five to ten tons. In late 1958 an Atlas missile sent into an orbit of 900-mile apogee height a last-stage vehicle weighing over four tons; Russia has already done much better. Thus it seems prudent to assume that advances in weaponry and missile propulsion will place 20 MT warheads at the disposal of potentially hostile ICBM (intercontinental ballistic missile) groups in the near future, if, indeed, this possibility has not already been realized. (4) Finally, for the case of Tucson, further reason for regarding 20 MT as not only reasonable but possibly even too low a weapon yield is found in the fact that Davis-Monthan AFB is currently under consideration as a prospective ICBM launching site. It has been estimated (Lapp, 1959) that to knock out the type of reinforced-concrete subterranean launching installations that are planned for such sites, enemy weapons must combine megatonnage and accuracy such as to impose blast overpressures of 100 psi upon these "hardened sites." Present missile accuracies, Lapp concludes, would dictate use of enemy weapons of well over 20 MT yield against such sites, 100 MT being not too much from an aggressor's viewpoint.

In all, the 20 MT assumption seems quite justifiable, albeit speculative. Assumption of a 5 MT or 10 MT weapon for the Phoenix attack might seem militarily more reasonable, but for simplicity of analysis, a 20 MT yield will be assumed for both cases.

Finally, it will be assumed that a *surface burst* rather than an air burst occurs at each target. It is ominously significant that all 2500 megatons which were assumed to be delivered to a total of 144 American cities in the Operation Sentinel paper-exercises were taken to be surface bursts. Although certain types of blast effects and all types of thermal radiation effects are much more injurious from air bursts than from surface bursts, the potential killing power of weapons in the megaton range resides above all in the *local fallout*, and, as we shall see below, this potential can only be realized in surface bursts.

Having set out the assumptions to be used, we may next examine the consequences of surface detonation of 20 MT weapons at the specified ground-zero locations in Tucson and Phoenix. It will be convenient to consider, in turn, blast effects, initial nuclear radiation effects, thermal radiation effects, and local fallout effects, and then to discuss questions of evacuation and survival of persons living near the hypothetical target areas.

BLAST EFFECTS — The first category of bomb damage, blast effects, will be discussed in three parts: fireball- and crater-formation, shock-wave destruction, and aerodynamic drag destruction.

Fireball- and crater-formation. — The energy-yielding fission process is accomplished within a time of the order of a microsecond after detonation, the attendant energy release raising to a very high temperature and pressure the fission products, the fissile but unfissioned residue, and the weapons case, all of which are rendered gaseous as a result of the million-degree temperatures developed. The sudden expansion of these incandescent gases forms the *fireball,* sets up an intense *shock wave,* and blasts out a large *crater* (in the case of surface bursts). The fireball rapidly expands to a maximum diameter of about two miles in a time of the order of ten seconds for the case of a 20 MT weapon, and concurrently accelerates buoyantly upward. Attaining maximum vertical velocities of the order of several hundred feet per second, the fireball and entertained air ascend through the entire troposphere and on into the stratosphere, the mushroom cloud reaching maximum altitudes of about 115,000 feet in a total elapsed time of only about ten minutes after detonation. (Unless otherwise specified, all numerical magnitudes are to be assumed applicable just to the 20 MT surface bursts here considered.)

A crater of diameter about 3500 feet and central depth of 300 feet is formed, and a portion of the removed soil and rock is blasted up into the fireball before the latter can get away in its buoyant ascent. It is this entrapped fraction of total crater-debris that becomes the vehicle for bringing back to earth the radiologically lethal fission products in the form of the local fallout.

A crater three-fifths of a mile across and of depth equal to the height of a 25-story building is impressive even in a state containing Diablo Crater and the Lavender Pit, but the total number of casualties and the total material damage directly attributable to crater-formation comprises only a minute fraction of the overall bomb effect. A much more potent feature of the explosion is the shock wave which we consider next.

Shock-wave destruction. — A hemispherically expanding shock wave propagates out from ground zero, initially with speeds of the order of four or five times that of sound, too fast for the material expansion of the fireball to keep pace, giving rise to early "breakaway" of the shock front from the fireball proper. As the shock front passes a given object, there occurs a sudden rise of pressure exerted on that object. The excess of post-shock pressure over initial barometric pressure is termed the *over-pressure.* As the shock wave diffracts around any large building, a very large overpressure acts selectively upon that side of the building nearer ground zero during the time required for the shock to propagate along the building to the far side. If the building or object is not too small and its ultimate strength not too great, the unbalanced lateral force may act for long enough (impulse great enough) to cause the structure to fail. Such damage is said to result from *diffraction loading,* since it takes place during the period within which the wave is engulfing (diffracting around) the structure. Well-closed buildings (and automobiles) also suffer an overall crushing action even after engulfment by the shock, but this type of damage is conveniently lumped together with true diffraction damage. In both of these cases, the degree of damage proves to be chiefly dependent upon the magnitude of the peak overpressure, and hence falls off with increasing radial distance from ground zero at a rate fairly accurately predictable from shock-hydrodynamical laws.

For reference use, the distance-variations of several parameters associated with the shock wave from a 20 MT surface burst are displayed in Table 1. For each of three radial ranges (r) in miles from ground zero, there is shown the peak overpressure (p) in pounds per square inch (psi), the shock-wave arrival time (t_1) in seconds, the duration of the positive overpressure phase (t_2) in seconds, the maximum wind speed (V_3) in miles per hour, and the associated peak dynamic pressure (q) in psi.

The last two quantities will be of interest in the later discussions of *drag damage.*

Table 1. Distance-variation of several shock-wave characteristics for a 20 MT surface burst. See text for definitions of tabulated quantities.

r (mi)	p (psi)	t_1 (sec)	t_2 (sec)	V_3 (mph)	q (psi)
5	10	11	7	300	2.3
10	3.4	30	10	115	0.27
15	1.8	51	12	70	0.07

From bomb-test data and from other considerations, extensive tables and graphs (AEC, 1957) have been prepared for use in estimating diffraction damage under a wide variety of specified conditions. For the hypothesized conditions of the Arizona attacks, one finds from these reference data that woodframe houses will be *totally destroyed* out to about 8 miles from ground zero as a result of occurrence of peak overpressures of up to about 5 psi out to that distance. Brick houses, so common in southern Arizona, suffer damage in apparently the same way at about the same peak overpressures as do woodframe houses (AEC, 1957) photographs, pp. 128-134). Only specifically reinforced houses of non-standard type can remain standing after passage of a shock with 5 psi overpressure. Woodframe and brick houses will, furthermore, be "badly damaged" (i.e., frames shattered so that structures are for the most part collapsed and will require major repairs before they could again be lived in except on emergency basis) out to a radius of about 17 miles, and will be "moderately damaged" (i.e., will have windows broken, doors blown in, and interior partitions cracked) out to a radius of 40 miles from ground zero. In Figures 1 and 2 the areas concentric with ground zero at Tucson and Phoenix within which the first of these three damage categories prevails have been indicated by 8-mile-radius circles. In Figure 2, which has been drawn to a smaller scale to permit delineation of longer-range bomb effects (that would be of more concern near Phoenix due to the presence of numerous surrounding communities), there is also shown the 17-mile limit of "badly damaged" homes that would require extensive or even prohibitive repairs before they could be made livable. Figure 2 reveals that in event of a 20 MT attack on Phoenix, *all* homes will be demolished not only throughout all of Phoenix proper but also eastward to Tempe, southward to the South Mountain Park area and northwestward to the edge of Glendale, many being destroyed even in Scottsdale and Tolleson. Homes will be partially collapsed in such distant communities as Mesa, Chandler, Goodyear and Marinette because even that far from ground zero the shock wave will arrive, about one minute after detonation, with peak overpressures in excess of 1.5 psi.

Although I know of no population-density data suitable for use in deducing from Figures 1 and 2 the expected number of persons whose homes would be destroyed, familiarity with the case of Tucson leads me to estimate that at least 90 per cent of the population of greater Tucson would find itself homeless within a bit under half a minute (see Table 1) after detonation. Inspection of photographs (AEC, 1957) of typical homes subjected to diffraction damage at the 5 psi level suggests that a heavy majority of the persons who were inside those homes at instant of shock-wave arrival would be dead or seriously injured within that same period of time as a result of mechanical injuries sustained during demolition of their homes. The Japanese experience strongly confirms this.

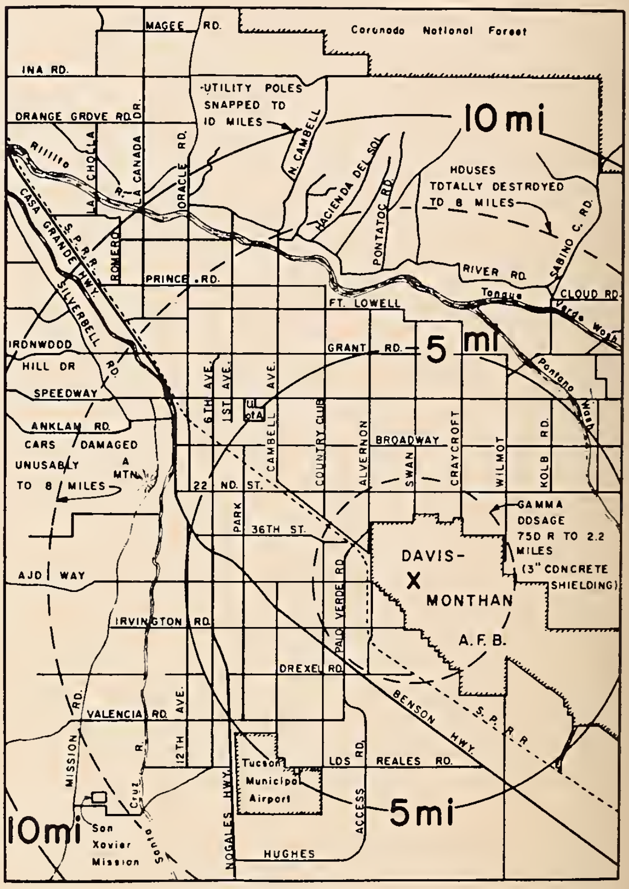

Fig. 1

Multi-story brick buildings of the general grade of construction found in apartment houses

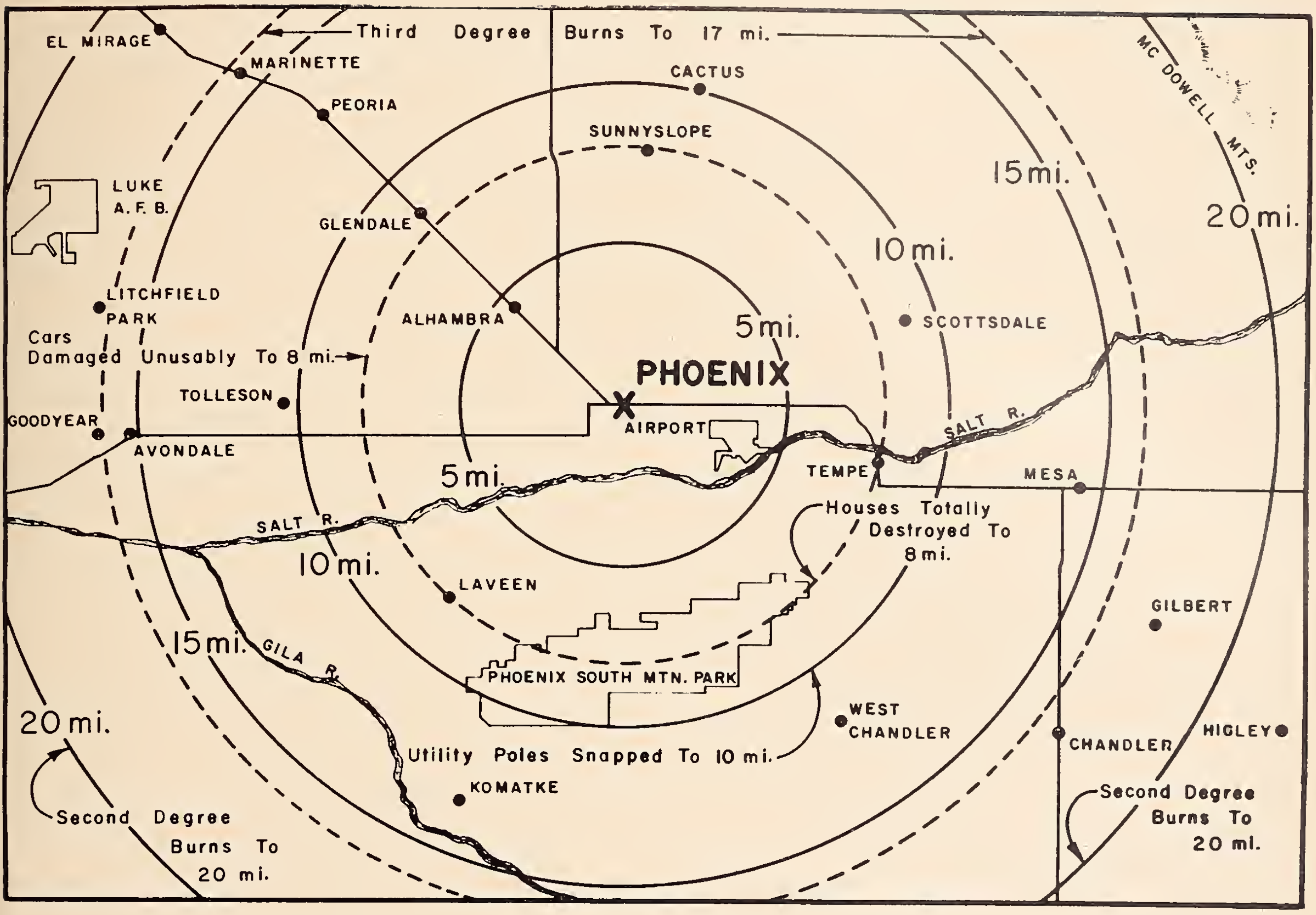

Fig. 2

would be totally destroyed out to a radius of rather more than 5 miles, and multi-story buildings with heavy reinforced-concrete frame and walls would be totally destroyed out to about 4 miles from ground zero and would be unusably damaged out to well over 5 miles. Thus, total destruction or heavy structural damage would be inflicted on Tucson Medical Center, U. S. Veterans Hospital, University of Arizona, and all downtown buildings in the case of Tucson, and similarly on the Arizona State Hospital, the U. S. Indian School, Grand Canyon College and all structures in the heart of Phoenix. All buildings and facilities at the municipal airports of both cities would be leveled.

Automobiles and other vehicles may be damaged both by diffraction loading (bodies crushed, frames sprung) and as a secondary result of the type of drag loading to be discussed in the next section, as well as by impacts from secondary missiles (rocks, bricks, timbers) torn from nearby structures. Nomograms for use in estimating vehicle damage are available only for the case of heavy trucks. Class C damage to heavy trucks implies "turned over and displaced, badly dented, frames sprung, need major repairs" and is found to occur within about an 8-miles radius of ground zero for a 20 MT surface burst. Passenger cars will suffer such damage to an even greater range from ground zero than will trucks due to the generally lighter construction of cars. But conservatively taking 8 miles as the radial limit of the area within which vehicles of all types would need major repairs before being drivable, one sees that evacuation of most of the surviving population of Tucson would have to be carried out without benefit of cars or trucks. About the same number of persons would face foot-evacuation in Phoenix, but this number would, of course, represent a smaller fraction of the total population of greater Phoenix. Widespread destruction of vehicles, along with other insuperable obstacles to vehicular evacuation, appear to have been ignored in current civil defense planning, possibly on the now outdated assumption that pre-attack warning will be received in time to evacuate before detonation.

Aerodynamic drag destruction. — Coming immediately after arrival of the shock wave are the high-speed winds that blow just behind the shock front itself. In Table 1, the values of V_3, the maximum air velocity developed just behind the shock wave, are given for three radial ranges from ground zero. In meteorological terminology, these blast winds would be spoken of as tornadic to well beyond 5 miles radius and of hurricane intensity to well beyond 10 miles. When so described, their ability to add appreciably to total bomb damage may seem more obvious. It is important to note that many types of structures inherently invulnerable to diffraction damage are demolished by drag damage during passage of these post-shock winds. Such objects as radio towers, utility poles, and trees have component members only a few inches or feet in thickness, so the shock wave, even when it has slowed down to sonic speeds, will advance from the near to the far side in a millisecond or less, too brief a time to produce much diffraction damage. That is, the total *impulse* delivered to such small objects during the diffraction period is too small to be very significant; and, of course, simple crushing action on the usually solid members of this class of objects is quite insignificant. But as the shock passes on and the post-shock winds rise to velocities of the magnitude indicated in Table 1, aerodynamic drag forces build up to values that may be well beyond the ultimate strength of the structures and failure occurs. Some objects fail due to combined diffraction loading and drag loading, automobiles being a case of great importance. After having the hood and top crushed and the frame sprung during the first millisecond after arrival of the shock front, the car may be rolled along the ground or flung bodily against resistant structures by drag forces.

For present purposes, primary interest centers on two very common types of drag-vulnerable objects — wood utility poles (telephone and power poles) and trees. In Tucson and Phoenix, unlike cities in areas with more abundant vegetation, blown-over trees will be generally less of an evacuation problem than blown-over utility poles, but even the generally sparse and generally low trees typical of Arizona cities would so litter streets with branches and limbs as to greatly complicate vehicular evacuation even if no other obstacles to motorized evacuation existed.

Experience with storm damage of a variety of types leads to the rule-of-thumb (AEC, 1957) that 30 per cent of trees of average type go down at about 100 mph, and 90 per cent go down at 140 mph. Using the appropriate scaling laws, one finds that in the hypothesized attack, 90 per cent of the trees within somewhat over 8 miles from ground zero will go down and 30 per cent will go down out to almost 11 miles. Even in an area with only 30 per cent of all trees down, it takes little imagination to see the sharply reduced probability of being able to use a car for evacuation purposes. A single tree blown across a driveway might prevent car-evacuation by an elderly couple or by a household in which the father was at work, or might at least delay evacuation for an hour or two — a delay that could be rendered fatal by fallout.

The distance from ground zero out to which wood utility poles are snapped depends upon whether one considers poles with lines arrayed transversely or radially, since in the former case, aerodynamic drag forces exerted on the wires add to pole drag in building up a large bending moment near the pole base. The AEC nomograms yield a radius of about 10 miles (peak post-shock wind velocity over 110 mph, Table 1) for the distance from ground zero to the limit of the area within which poles bearing *radial* lines will snap, and 13 miles for the corresponding limit to which poles carrying *transverse* lines will go down.

Referring to Figures 1 and 2, one sees that this implies that *all* wood telephone and power poles throughout greater Tucson would go down, and that the same would be true not only in Phoenix proper, but even in Tempe, Scottsdale, Sunnyslope, and Glendale. Drive through any one of these communities examining the network of lines and poles, visualize all of these thrown down in ray-like pattern pointing away from ground zero, and estimate the finality with which this would eliminate hope of vehicular evacuation of these cities. Even in wide arterial streets within a ten-mile radius of ground zero, where fallen poles alone might not rule out slow go-around traffic, the maze of wires festooned over trees and houses and sagging erratically across the streets would preclude penetration by vehicles for tens of hours even if there were all-out effort by all survivors to clear the streets. But survivors have not tens of hours, only tens of minutes, in which to evacuate before fallout begins to arrive from the stratospheric mushroom cloud, so utility-pole damage alone would dictate evacuation *on foot*, even if vehicle damage did not also require walking evacuation.

Because utility-pole failure, by itself, so adversely influences evacuation prospects, and because pole-failure is one of the few types of bomb damage simple enough to be roughly analysed in terms of basic physical principles, I have made an effort to check the above figures derived from the published damage-nomograms. From a local telephone company I have determined that 35 feet is a good working average pole-height and 10 inches a reasonable basal diameter. Western red cedar is the most widely used type of pole in this area and has an ultimate fiber stress of about 5600 psi (Kurtz, 1942). The problem becomes that of estimating whether the maximum fiber stress near the 10-inch diameter base of a 35-ft cedar pole carrying a plausible number of lines of reasonable diameter and span will exceed 5600 psi just after the shock wave passes. Numbers and sizes of lines vary considerably, but it will be reasonable to consider six lines of 200-ft span, each of 0.30-in diameter, strung transversely at 10 miles from ground zero, where Table 1 shows peak wind speeds of 115 mph occurring. The Reynolds number for airflow about a pole under these conditions is found to be about $6x10^5$, that for airflow about the wires only $2x10^4$. The drag coefficent for a cylinder at the latter Reynolds number is 1.2, but for the former is only about 0.3 (assuming development of a fully turbulent boundary layer above the critical Reynolds number near $4x10^5$). The bending moment due to wire-drag may be assumed to operate through a lever-arm of 30 ft (wires averaging 5 ft below pole top), but the pole-drag behaves as a uniformly distributed load, if we ignore pole-taper. The section modulus at the base is here about 100 in^3, and hence the total bending moment at the base, found on the above basis to be $5.7x10^5$ in-lb, implies a maximum fiber stress of about 5700 psi, slightly in excess of the ultimate strength of western red cedar. Hence one would expect the pole to snap near the ground under the assumed conditions. It will be seen that this calculation, taken alone, indicates that pole-failure with transverse lines should be observed only to radii slightly greater than 10 miles from ground zero in contrast to the 13-mile limit previously derived from the AEC nomograms. However, it seems likely that the latter not only incorporate more reliable statistics on pole-size, line-size and line-span than used here, but also include empirical allowance for physical effects that transcend simple wind-tunnel experience with respect to drag forces on cylinders, so the present calculation will only be regarded as showing that the published data on pole-damage must be essentially realistic.

As an indication of probable density of barricading utility lines per unit length of city thoroughfare, I have made counts in Tucson of the number of overhead lines crossing measured stretches of various streets. On main thoroughfares well within the city, counts taken over a total of 13 miles averaged 60 transverse lines per mile. On secondary streets in residential areas, where numerous feeder lines are strung, a 5-mile check gave 95 miles per mile, or about 50 per cent higher than for main streets. If we assume that a survivor using a hypothetically undamaged car must drive a half-mile on residential streets to get to an arterial street, and then must drive, say, three miles to be entirely outside the metropolitan area, he must expect that some 220 utility lines will be down transverse to his route. Even if only a small fraction of these were sagging above ground, suspended on partially collapsed homes or untoppled trees, they would constitute a highly effective barrier to vehicular evacuation, even ignoring the downed poles themselves. Perhaps herein we have one facet of nuclear-bomb-damage whose human consequences can be vividly imagined by laymen if suitably emphasized.

INITIAL NUCLEAR RADIATION EFFECTS. — It has become customary to identify as the "initial" nuclear radiation that which is emitted from the fireball within the first *minute* after detonation. The basis for this is arbitrary, yet simple in principle: the rapidity with which buoyant forces act to accelerate the fireball implies that in about one minute the fireball and its radioactivity is carried several miles aloft, too far above the earth's surface for even the most energetic gamma rays to penetrate the atmosphere below to cause injury to persons on the ground.

The gamma dosage received by persons near ground zero depends upon the nature and thickness of absorptive material shielding them. For gammas of energy range typical of initial radiation (average energy about 4.5 mev), the half-value thicknesses (depth of shielding required to halve the gamma flux) of several common materials run as follows (AEC, 1957): steel, 1.5 in; concrete, 6 in; dirt, 7 in; and wood, 23 in. Probably 3 in of concrete equivalent shielding is a reasonable average for city-dwellers as a whole, which implies an almost negligible shielding factor of 1.3. From the scaling laws for predicting gamma dosage, one finds for the hypothesized conditions that persons behind 3 in of concrete will receive an essentially lethal dose of 750 r (roentgens) out to 2.2 miles radius from ground zero. Beyond this circle the gamma dosage diminishes extremely rapidly so already at 3 miles from ground zero the dosage is only 30 r. The physical explanation is that the atmosphere has a half-value thickness of about 1000 ft for the gammas.

Whole-body dosage of 750 r is lethal in the sense that death is nearly certain within a time of the order of a *few weeks*. The persons irradiated would, however, note no *immediate* effects other than a tingling sensation in the skin. But all of this is really of only academic interest, for although this destiny of dying of radiation sickness within a few weeks is established with the speed of light, real and immediate death of these lethally irradiated persons near ground zero is effected only a few seconds later when the actual shock wave arrives with peak over-pressures of about 45 psi followed by blast winds of over 800 mph sweeping over the rubble. The conclusion seems almost inescapable that there will never be nuclear-attack deaths directly attributable to the effects of initial nuclear radiation. If one is not adequately shielded from the gamma radiation he is surely not adequately shielded against the tremendous blast effects characteristic of the area within the two or three miles of ground zero wherein this type of radiation death is even possible. (Radiation death from local fallout, it must be emphasized, is quite another matter. In the above we have considered only gamma irradiation from the fireball itself during the first minute after detonation.)

THERMAL RADIATION EFFECTS. – The incandescent fireball acts roughly as a blackbody emitter whose effective temperatures start in the million degree range. A peculiar phenomenon that prevents almost all the radiation from leaving the fireball in the early stages is the shock-heating that produces a hemispherical shell of air that is opaque to the short-wavelength emissions from the fireball during the first millisecond or so before the fireball temperatures fall to more terrestrially common values. Subsequently, the decrease in intensity of the shock-heating as the shock wave expands and grows less intense unmasks the fireball at about a second after detonation, at which time the effective emission temperature is near 8000° centigrade. Then, during the period from about 2 to 20 seconds after detonation, the ascending fireball acts as an exceedingly dangerous thermal radiator, whose effects we now consider.

Two thermal radiation effects become of human importance: *flash-burning of skin* and *ignition of inflammable materials*. Both are less severe for surface bursts than for air bursts, since in the former case the fireball is still low over ground zero when emitting most intensely, and the usual low-lying dust as well as actual objects (trees, buildings) impose more absorption on the radiations under these geometrical conditions than in the case of an air burst at several thousand feet above terrain. Experience indicates that by taking 60 per cent of the distance at which a given radiative energy is received from a typical air burst one gets the corresponding distance for that energy in a surface burst.

One finds, in this way, that the effective thermal radiation loads are here 160 cal/cm^2 at a radius of 5 miles from ground zero, 36 cal/cm^2 at 10 miles, 16 cal/cm^2 at 15 miles, and 12 cal/cm^2 at 20 miles. On the other hand, for the time-temperature characteristics of a 20-MT fireball, the energy required for a first-degree skin burn is 4 cal/cm^2, for a second-degree burn 8 cal/cm^2. Therefore, in the hypothetical Tucson and Phoenix attacks, third-degree burns will be received by persons caught in the open within about 17 miles of ground zero, second degree burns within about 20 miles, and first-degree burns out to about 27 miles (see Figures 1 and 2). The seriousness of any of these three classes of burns is a function of total skin-area burned, of course. Clothing of some types will afford protection, but severe burns can be received right through many fabrics of the light weight commonly used for shirts and dresses most of the year in southern Arizona.

Noting from the above results that the radiative loads received within 10 miles of ground zero exceed *three times* the intensities sufficient to inflict *third-degree* burns, one must conclude that throughout all of Tucson and Phoenix proper, persons who happen to be outdoors and who do not take evasive action within seconds of detonation will suffer very severe flash burns on face, hands, and other exposed or thinly protected areas. (It is relevant to recall that about a third of the World War II Japanese A-bomb fatalities resulted from such flash burns from air bursts emitting only a thousandth of the radiation of the 20 MT weapon here considered.) Anyone with presence of mind to take immediate cover upon appearance of the first fireball glow can eliminate much of the danger of thermal radiation burn if he happens to be many miles from ground zero, since the total damage is spread over about 20 seconds. Very near ground zero, however, one would absorb 11 cal/cm^2 too quickly to make evasive action so decisive (e.g., at 5 miles from ground zero, one could absorb 11 cal/cm^2 in only about 2 seconds).

The immediate thermal radiation danger to persons caught in the open at moment of detonation does not end with skin burns, however, for these persons may find their clothing ignited by the thermal radiation. Of the fabrics whose ignition thresholds are published, those most representative of the types of clothing common in southern Arizona run as follows: cotton corduroy (brown), 11 cal/cm^2; cotton shirting (tan), 13 cal/cm^2; cotton denim, used (blue), 13 cal/cm^2; and cotton sheeting, unbleached, washed (cream), 30 cal/cm^2. Comparing these ignition requirements with the intensities cited above, we conclude that almost any typical clothing would flash into flames within Tucson and Phoenix proper; and most clothing would, in fact, be ignited in exposed locations out to somewhat beyond 15 miles from ground zero (e.g., in Mesa and Peoria or in Vail and Sahuarita). Little imagination is required to see how greatly the problems of evacuation and sheer survival are magnified by the probability that very large numbers of persons in the target communities will receive severe burns, either from direct radiation or from burning clothing. Or, put in still more vivid (but, I believe, not unrealistic) terms, one may reflect upon the way in which a *single family's* evacuation efforts might be slowed down or brought to a halt by thermal radiation burns suffered by only a *single member* of the family. Target-area hospital facilities would either be destroyed or so damaged that nothing like adequate first-aid treatment for victims with burns and other injuries would exist, needless to say.

Turning next to ignition of fires in materials other than clothing, we find that coarse grass, igniting at about 1^6 cal/cm^2, would flash into flame out to 15 miles, and fine grass, igniting at only about 10 cal/cm^2, would be in flame out to beyond 20 miles from ground zero. Leaves of deciduous trees (12 cal/cm^2 ignition threshold) would be aflame to about 20 miles, dry pine needles to about 14 miles. The Tucsonan would, within a half-minute after detonation, find most of the front range of the Catalina Mountains a nearly solid bank of flaming vegetation. The radiative ignition of grass and leaves would precede arrival of the post-shock winds for all points beyond about seven or eight miles from ground zero. Perhaps the winds would extinguish the flames in some cases, but in others these winds would probably serve chiefly to increase the fires. In any event, it seems very likely that throughout an area extending for many miles around ground zero, fires would be developing in the ignited and wind-strewn litter, adding still further physical and psychological obstacles to evacuation. Running water would almost certainly be unavailable for use in fighting such fires. Nevertheless, the chance of a major conflagration, a storm-fire, seems small since the average tonnage of combustible vegetation per acre is much lower in Arizona cities than, say, in cities in the East. Somewhat offsetting this advantage is the disadvantage that ignitibility is much greater for dry than for moist plant materials. Large numbers of small fires would seem the reasonable prediction, except in the foothills grasslands areas (e.g., Catalina foothills area north of Tucson) where the vegetation density might be sufficient to carry the fire, thus creating locally serious hazard to evacuation and possibly even to survival.

It is very much more problematical to try to estimate numbers of casualties from thermal radiation effects than from blast effects because radiation injury depends so critically on degree of exposure to the rays from the fireball. An extremely rough guess would be that, at any one time of the *daylit* period, some 10 per cent of the population might be out of doors in exposed spots (very much lower at night). The Japanese experience shows that persons near windows or other openings in houses may also be seriously burnt, but it is not possible to allow quantitatively for this contingency. On the 10 per cent assumption, some 20,000 persons in Tucson and 30,000 persons in Phoenix proper would receive third-degree burns on exposed skin surfaces and suffer from probably still more serious clothing burns due to almost 100 per cent certainty of ignition of clothing on all persons out of doors within ten miles of ground zero. The number of burn casualties outside of the limits of these two cities would also be significant, especially in the Salt River Valley area with its numerous small communities surrounding Phoenix.

LOCAL FALLOUT EFFECTS. — The last bomb effect to be considered here is also chronologically the last to occur but is by far the most serious hazard to survival after nuclear attack when weapons in the megaton range are involved.

The surface-burst fireball blasts into itself some million tons of debris (a small fraction of the total soil and rock removed in crater-formation at ground zero), instantly vaporizes it, and mixes the resultant gases with the gaseous fission products as the fireball buoyantly ascends. Within about a minute later the fireball, now several miles aboveground, has radiatively and expansively cooled to the boiling point of the soil materials and then to their solidification point (order of 2000° centigrade), during which two stages the soil materials recondense into droplets and then solidify to form tremendous numbers of very small solid particles upon which the fission products may themselves condense. Apparently an efficient process, this sequence of events puts the radioactive fission products on particles whose terminal fall velocities are large enough to bring them back down to earth before their radioactive decay has reduced their general activity below the radiological danger point.

The result: This *local fallout* of contaminated particles covers the ground for *thousands of square miles* around and downwind from the target area with a lethally intense though invisible film of gramma-emitting dusts over which it will be unsafe to walk for post-detonation times of the order of many *days*. As dangerous as are the blast- and radiation-effects previously discussed, the radiological effects of local fallout are much worse. "For the thermonuclear weapons now in development and production, the direct effects of the explosive energy sink into relative insignificance when compared with their radiological effects" (India, 1958, p. 7).

Local fallout must be carefully distinguished from the currently-occurring *worldwide fallout* of bomb-test radioactivity. The latter is, by contrast, very slow and of low intensity since it results from air bursts or else from low-yield tower bursts, neither of which provides soil debris particles to bring down the fission products in their early state of intense activity. Megaton surface bursts, on the other hand, begin delivering the fission products, via local fallout, to the countryside within an hour or less, at which time the contaminated dusts still act as sources of gamma radiations of great penetrating and killing power.

A striking characteristic of mushroom-cloud formation is the cloud's almost immediate horizontal expansion to radii of tens of miles once it enters the stable stratosphere. For the 20 MT weapons here considered, the mushroom cloud will spread out (Kellogg, and others, 1957) to a radius of about *30 miles* within about *ten minutes* after detonation. That is, ten minutes after the hypothetical Phoenix detonation a massive cloud will stretch from Buckeye to Apache Junction, from Maricopa to New River, and the Tucsonan would find himself under a cloud reaching from Pantano to beyond Marana, from Oracle to about Amado. Pacific bomb-test experience indicates that final stabilized mushroom-cloud radii of as much as 50 miles may occur. What will be the subtle psychological effect exerted on already stunned target-area personnel by the almost instanteous imposition of this huge dark cloud above them?

But there are worse than psychological hazards in the cloud, for it will be radioactively contaminated out to a radius of at least 20 miles, so it is from a disc of 40-mile diameter concentric with ground zero that the rain of radioactive dust starts down. What this means to the evacuee is that he must very quickly get some 20 miles out from ground zero if he is to be sure of avoiding the local fallout. When wind-drift is taken into account, one sees that a critically important point is to evacuate towards the upwind direction, where "upwind" means

FIG. 3

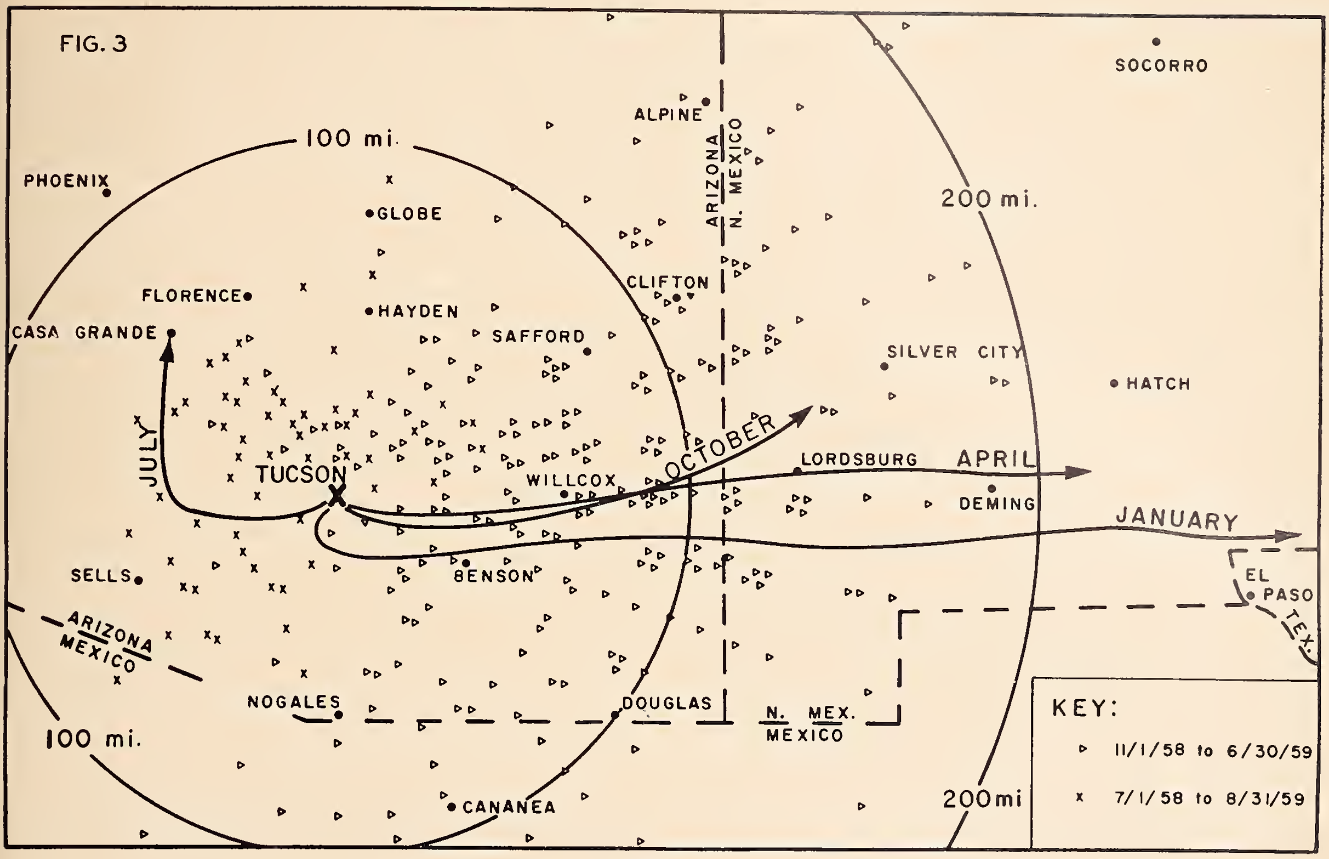

Fig. 3

with respect to the vector-resultant wind throughout the entire layer from about the level of the stratospheric mushroom cloud down to the ground. Mere surface wind information is of no help, for the vector-resultant wind for the entire troposphere may be 180° opposed to the surface wind (e.g., the August afternoon surface wind at Tucson is almost invariably from the northwest, but the mean fallout drift for August is *towards* the northwest; here is an instance where a little knowledge may be a fatal thing).

The U. S. Weather Bureau has for several years been computing twice-daily fallout winds at about sixty upper-air observing stations throughout the country in order to have available, at any moment, fallout winds no more than 12 hours old. In Arizona it is the Tucson Weather Bureau office that is currently performing this function. To indicate the Arizona areas that are most likely to be subjected to local fallout, I have plotted in Fig. 3 the locally available data for the ten months, November-August, 1958-59. Each plotted point in the figure represents the calculated distance and direction towards which fallout particles of a particular size (220 micron diameter, density 2.5 g/cm^3) would have drifted during fall from the 80,000-ft. level on a particular day (not indicated in the figure). Such particles require three hours to fall 80,000 ft., so Figure 3 presents 3-hr. drift loci. Available evidence (Kellogg, and others, 1957) suggests that only about 15 per cent of the local fallout comes down on particles as large as or larger than 220 microns in diameter, so it is important to note that most of the fallout from 80,000 ft. travels much farther than the points of Figure 3 indicate. However, because the bulk of the fission products effectively start their fall not from near the top at 85,000 ft., but from a mean height of perhaps 60,000 ft., nearer the base of the mushroom cloud, one may take these points as tolerably good indicators of average fallout drift for all particle sizes and all heights of origin. (The actual fallout process involves innumerable trajectories for a continuum of particle sizes and for a continuous distribution of heights of origin. Hence a really detailed prediction of fallout patterns can only be carried out through use of high-speed electronic computation (Kellogg, and others, 1957).

In Figure 3, the points for the two summer months of July and August, 1959, are distinctively symbolized with crosses to bring out the fact, exceedingly important to the Arizonan, that the mean fallout drift during the summer rainy season is almost opposite to that for the other eight plotted months (triangles). To emphasize this significant point, I have computed and plotted in Figure 3 four different *mean monthly fallout* trajectories (solid curves in figure) for particles whose diameters are equal to the median diameter observed in actual bomb-tests, namely 100 microns. Such particles fall to the ground in about six hours from the 75,000-ft. height of origin assumed in calculating these trajectories. The wind data were ten-year means for the period 1946-55 (Ratner, 1957). Examination of these four trajectories plus study of the mean wind data for the other eight months of the year showed that southern Arizona mean fallout vectors point almost due east throughout all the year except during July and August, when southeasterly upper-airflow prevails. It is a point of some meterological interest and of considerable importance to the potential evacuee that a peculiar 90-degree bend occurs in the July (and August) mean trajectory. This results from mean east-to-west drift of particles while they are still falling through the stratosphere followed by mean south-to-north drift while falling from the tropopause to the surface.

The Tucson fallout data of Figure 3 are almost equally applicable to Phoenix, since there are usually only very slight differences in upper-air wind speeds and directions over the 100-mile distance separating Tucson and Phoenix. That is, one may simply translate these patterns bodily, bringing ground zero onto Phoenix to infer the downwind fallout problems associated with a Phoenix attack.

The ground-level dosage rates vary with weapon yield and with meterological conditions and, of course, with time. It has been established that the variation with time since detonation, t, may be reasonably well described by a $t^{-1.2}$ decay law, a composite of many different exponential decay laws of many different radioactive fission products. Thus, every sevenfold increase in time since detonation brings roughly a tenfold reduction in ground-level dosage rate (once all the fallout destined to reach a given spot has arrived there). Consider, for example, a locality such as Willcox or Globe in winter, with west-to-east drift. No gamma-active dusts would arrive until perhaps two hours after the attack. But after that elapsed time, the dust would start sifting down, and the gamma-dosage rate would begin to climb as more and more of the finer dusts arrived. Maximum dosage rate might occur in Willcox or Globe at about six to eight hours after detonation, for not only will most of the dust particles that have fall-times greater than this tend to drift right on over Willcox or Globe, but also, of course, all the fission products, whether on the ground or still settling to the ground, are losing their activity as time progresses. If we take 7 hours after detonation as the time of peak ground-level dosage rate, then in view of the $t^{-1.2}$ law, the dosage rates will be down to about 10 per cent of their peak value in about 49 hours (7 times 7 hours) after the attack. By about two weeks (7 times 7 times 7 hours) after attack, the dosage rate at Willcox or Globe would be down to only one per cent of its peak value.

The question of human importance is that of the magnitude of these varying dosage rates as compared with the lethal whole-body dose of about 750 r (lethal in the sense that radiation sickness would bring death in a few weeks, not immediately). So many different meterological conditions can occur that only average values can be given. From bomb-test data, it has been deduced that for a 20 MT surface burst, 48-hour integrated whole-body doses equal to or greater than 750 r may be expected to exist around the target and in downwind areas comprising a total of from 2,000 to 20,000 square miles. We may take 10,000 square miles as a representative 48-hour lethal-dose area for a 20 MT surface burst. Exposure over more than 48 hours will obviously yield somewhat greater total dosage and, more important, even outside the above-specified area, persons will be exposed to what may for them be lethal dosages, since the whole-body dose at which 50 per cent fatality-rate occurs is only about 450 r. A 48-hour integrated dose of 450 r can prevail over an area as great as 30,000 square miles with certain wind conditions (Kellogg, and others, 1957).

Since the contaminated portion of the mushroom cloud itself has a diameter of about 40 miles, and since a small amount of spreading will occur, we must imagine a 50-mile-wide swath, extending some 200 miles downwind from Tucson or Phoenix, within which everyone not heavily shielded against gamma radiation will receive, in two days subsequent to the attack, fatal doses of radiation. Such communities as Superior, Miami, Globe, Benson, and Willcox are therefore radiologically about as vulnerable as the target cities of Tucson and Phoenix. Furthermore, Figure 3 reveals convincingly that variations of the actual upper winds from their average west-to-east direction are great enough and frequent enough that Casa Grande, Florence, McNary, Showlow, and Springerville would be within the lethal-dosage fallout areas extending downwind from Phoenix on many days, while Tombstone, Bisbee, Douglas, Safford, and Clifton are frequently within Tucson's lethal-dosage fallout area. Persons in any of these areas would have to leave their homes and go to an area not contaminated by fallout from still other targets or else stay for a period of the order of two weeks in some kind of underground shelter that gave a protection factor high enough to match the local dosage rates. Simply to stay aboveground and go about one's work anywhere within the entire 10,000-square-mile area would insure the sequence of nausea, vomiting, and hemorrhaging that ends in death due to the complex and deep-seated physiological damage loosely described as "radiation sickness."

EVACUATION AND SURVIVAL. – Although numerous air-raid sirens have been set up in cities such as Tucson and Phoenix, recent ICBM developments make them of dubious value: Tucson is about 15 minutes by ICBM from the Anadyr Peninsula of Siberia where potentially hostile missile launching pads now exist (Galloway, 1957). Even if subsonic manned aircraft are the only nuclear bombing threat at date of this writing, it is safe to predict that this situation will change within only a few years to threat of hostile 15-20,000 mph ICBM's. At that time "evacuation" can have only one meaning – evacuation *after* attack.

The quantitative bomb-damage estimates outlined above show all too convincingly (at least to those who see them as following logically from the physical laws governing bomb phenomenology) that evacuation of Tucson and Phoenix would be an incredibly difficult task. Consider Tucson. In the hypothetical attack discussed here, nine-tenths of Tucson's homes are estimated to be demolished, many going down about the heads of their owners, immediately creating a mass of perhaps 175,000 homeless persons, many already dead or seriously wounded from mechanical injuries, others severely burned by direct thermal radiation skin-burns or by burns from clothing radiatively ignited. Another 25,000 Tucsonans in the fringe areas would be confronted with badly damaged homes and with non-fatal but serious mechanical and radiation injuries. All of this within a minute after detonation. Over most of the city, cars and trucks would have been rendered undrivable by blast damage, but even if drivable, the presence of barricades of power and telephone lines and utility poles lying across block after block of streets, with trees and building debris interstrewn, would preclude evacuation by car from all points closer than a dozen miles from ground zero. For the bulk of the survivors the alternatives would simply be those of walking or staying.

Consider first the alternative of staying near one's home. To stay would not be to survive unless one had adequate shielding from the fallout radiations that begin, near ground zero, within about a *half hour* or less after detonation, due to heavy fallout from the *stem* of the mushroom cloud. On the *upwind* side of ground zero, at radial distances of rather more than 10 miles, one might stay without more than mild radiation sickness and sequelae. On the downwind side, departure would be imperative, but the only possible way to go would be to circle around the soon-to-be contaminated area several miles out from ground zero. This circumnavigation of the stem-fallout area, however, is almost impossible on foot. There simply is not time enough at fast walking speed. Thus blast-survivors on the *downwind* side of the target and not far enough out to be able to escape fallout in vehicles are certain to be fallout victims. Note, however, that all of these people would, for a few weeks, be alive, though incapacitated after half a day or so by the heavy radiological injury sustained in skirting the immediate blast area.

In other geographical regions, the usual recommendation of taking refuge in one's basement offers something like a tenfold protection factor from gamma radiations originating on dust deposited on the roof or on the surrounding yard. This happens not to be nearly enough protection close to ground zero under most wind conditions, so it is often recommended that the home owner dig from his basement into the adjacent subsoil to take advantage of shielding by the soil. But in any event, the typical Arizonan will not have to weigh the latter decision, for he has no basement. Inquiry at a large local home-building firm brought the estimate that only a fraction of one per cent of existing southern Arizona homes have basements. Public buildings with basements might offer partial shelter for a tiny fraction of the survivors of the first minute's destruction, but beyond that, the informed person would know that (if he is not in the essentially doomed downwind sector) he must get out from under the contaminated portion of the mushroom cloud, and get out exceedingly quickly. Delay beyond *tens of minutes* would be very serious, viewed radiologically. But what family could ordinarily hope to assemble its members from schools and places of work in tens of mintues to begin walking rapidly out of town? Very few, I fear, so evacuation may be a process with peculiar sociological selectivity.

Nevertheless, we may briefly examine the prospect of walking-evacuation of Tucson or Phoenix for persons on the upwind side of ground zero and located, say, 5 to 10 miles out. In the winter months this alternative is not too hopeless if we overlook the family-assembly difficulty and the low probability of any sample of four or five persons in Tucson or Phoenix being entirely uninjured and hence in walking condition. By making all possible haste, one might move westward (assuming west-to-east airflow aloft) fast enough compared to fallout descent rates that he would suffer only mild radiation sickness. Furthermore, in winter, the problem of getting drinking water is less urgent. Tucsonans, for example might get into the Avra Valley and be lucky enough to get water within a half-day, though food would quickly become a limiting factor because of lack of towns with any residual food stocks in that region west of Tucson. The Phoenix evacuee is distinctly better off in winter.

But in *summer* foot evacuation from any southern Arizona city is a nearly futile venture. From May to September, temperatures are so high that most persons cannot walk (assuming daylight attack) much more than ten to fifteen miles without water, whereas upper winds are much lighter, demanding *greater* upwind flight to get out from under the only slowly drifting contaminated cloud. On a June day with maximum temperature of 101° F., I found that I could cover slightly over 12 miles in three hours after drinking to full capacity at the start, but had lost 10 lb. and was near exhaustion at the end of that stint. This personal experiment agreed well within the results of extensive studies carried out with troops in desert areas in the Southwest during World War II (Adolph and others, 1947). *Fifteen to twenty miles* is the greatest distance to which troops in *excellent physical condition* can walk without water under average daytime southern Arizona summer conditions, judging from the Army experience. But with a contaminated radius of about 20 miles and light winds aloft, *every survivor who is to remain a survivor* will have to go roughly this distance and with no running water available anywhere along the route due to blast damage of water systems. For the young and old members of the population, this would thus be an impossible trek to make, despite its urgency. Mere thermodynamics of water consumption and questions of physical fitness impose limits to escape by foot from the target areas in summer. Even on the upwind side of ground zero in summer, the fraction of the population that could avoid lethal radiation dosage would fall very low except beyond about fifteen miles out from ground zero where vehicular evacuation would be possible. Put in the context of the Phoenix attack, a majority of Tempe residents fleeing southeastward in July or August would not be able to move fast enough and far enough towards possible temporary haven in, say, Mesa (haven in the sense of probably providing some drinking water) before receiving many hundreds of roentgens, so most of them would be almost as sure to be radiologically killed as would the more obviously doomed residents of Glendae. Tucsonans are much worsle off: On the average in July and August, Davis-Monthan AFB lies upwind of almost all of metropolitan Tucson, so a summer attack could radiologically eliminate essentially the entire population of Tucson.

Actually, this discussion of evacuation and survival can make no claim even to topical completeness, for I am not weighing psychological questions of human response to the calamity itself. Studies of what are, by comparison, small-scale disasters show that a kind of dazed paralysis often immobilizes uninjured persons for several hours after the disaster. Since there are no carefully practiced evacuation procedures for nuclear attack, everyone will be on his own, and a state of shock that prevents intelligent action within fifteen or twenty minutes of detonation will insure radiological death for tens of thousands of residents not blast-killed but still close enough to be in the stem fallout area on the upwind side (those on the downwind side, to repeat, are essentially doomed). Add shock to the high probability that *families* will not be able to assemble for flight, and the overall psychological obstacles become as great as the purely physical obstacles.

Nevertheless, if nuclear attack must be reckoned with, it is clear that detailed knowledge of bomb phenomena is the indispensable requirement in taking advantage of every circumstance following an attack. At present such knowledge is, I believe, nearly nonexistent in the population, so its presentation to the public is urgently needed. Given much more detailed information as to the awesome prospects of nuclear warfare, we might even take more active steps to prevent their realization.

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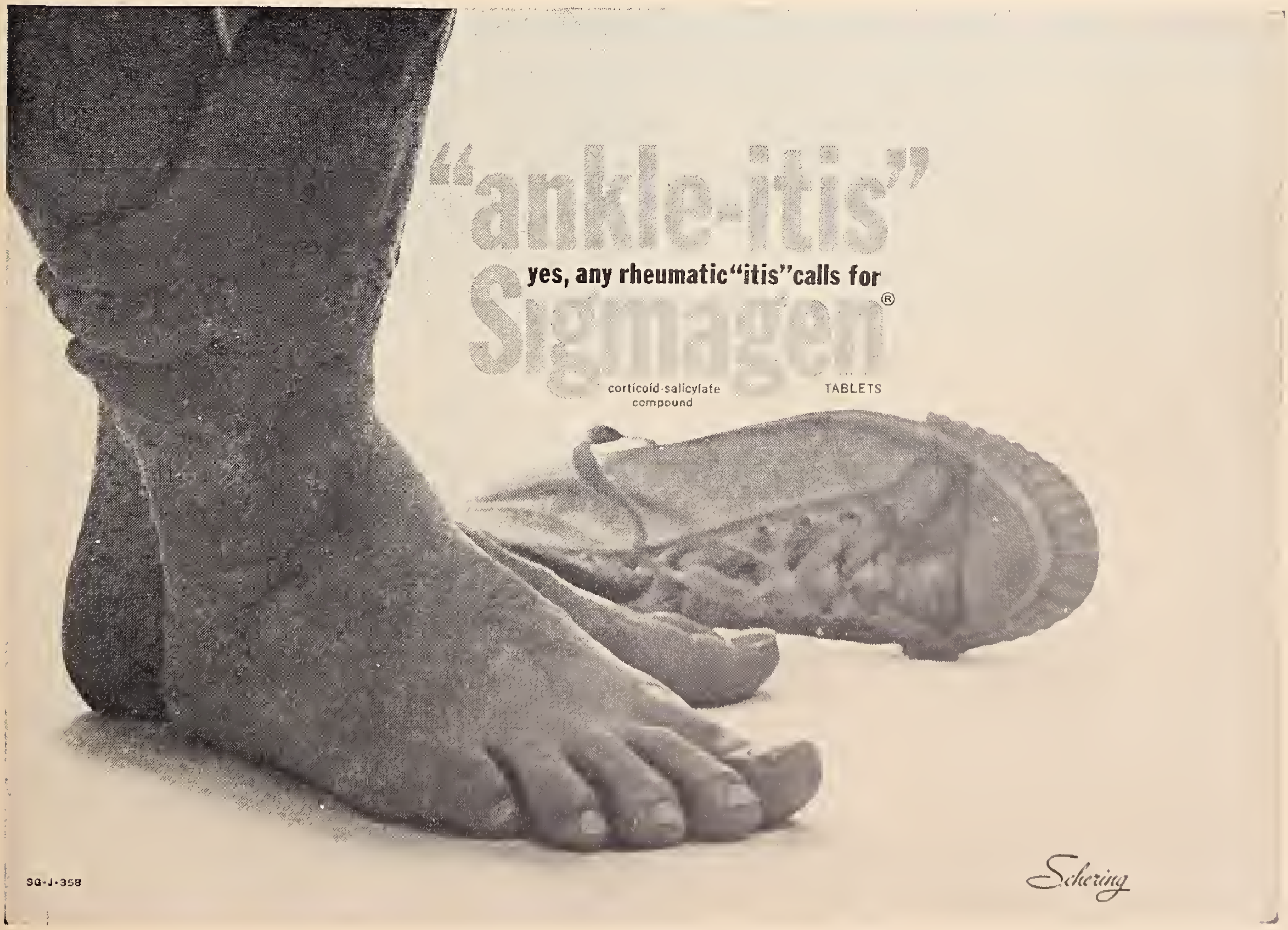

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Panels on: Cancer of the Breast, Cancer of the Lung, Cancer of the Female Genital Tract.

General Session: Address: Frontiers in Biology and Cancer Research, Cancer Pathogenesis and Spread.

Panels on: Cancer of the Gastrointestinal Tract, Cancer of the Male Genitourinary Tract, Leukemias and Lymphomas, Cancer in the World Around Us.

General Session: Address: Care of the Advanced Cancer Patient, Cancer Therapy.

Panels on: Cancer of the Skin, Cancer of the Head and Neck, Cancer Control.

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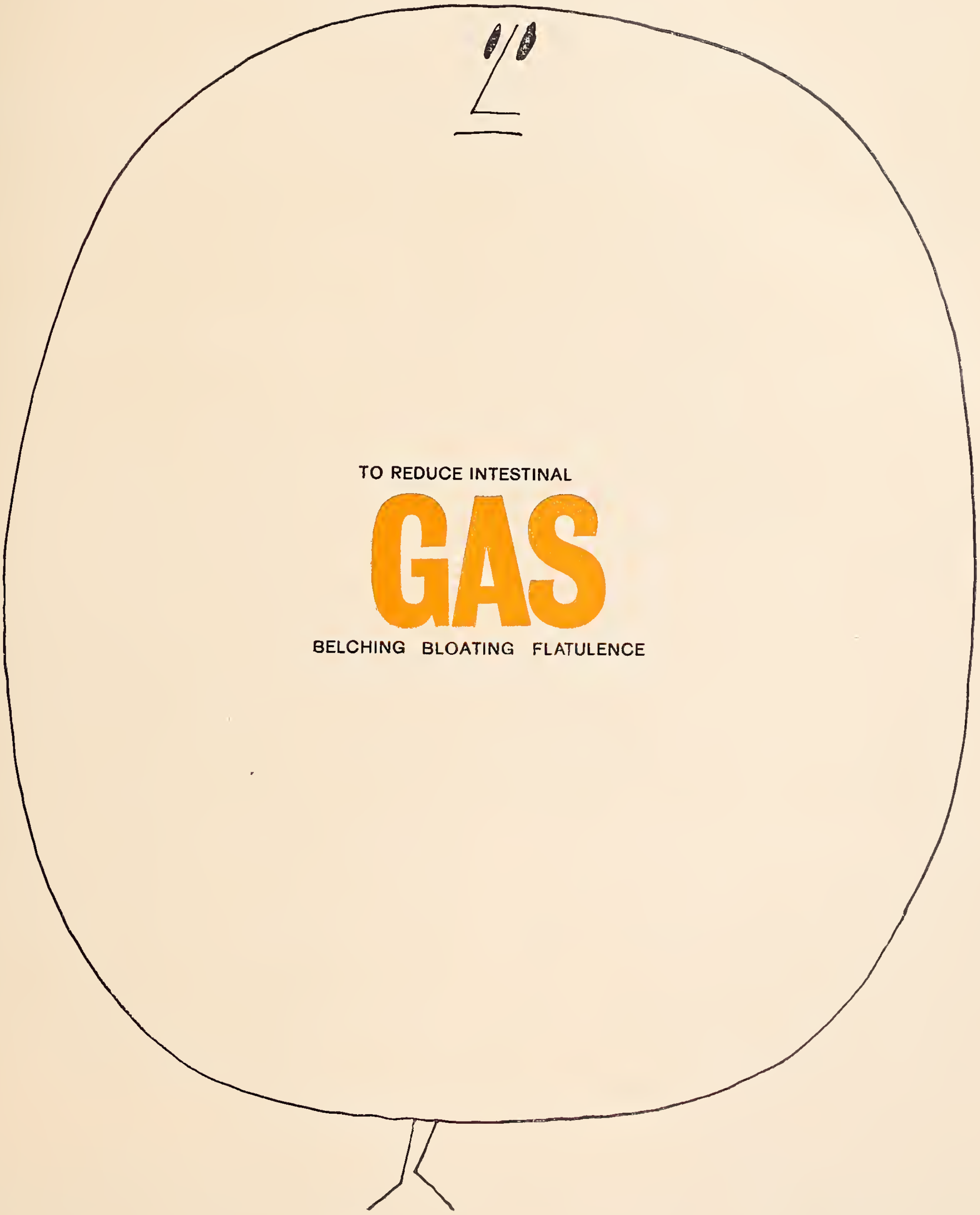

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The patient should understand that if he increases his consumption of polyunsaturated fatty acids without reducing his intake of other fats, little is gained save for additional calories which could lead to obesity. A particular regimen will be effective only if polyunsaturated fatty acids are responsible for an appreciable percentage of the total fat calories. That is, they must replace rather than supplement some of the saturated fats and oils already in the diet.

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* * *

Low-fat diets will not reduce the concentration of circulating cholesterol and lipoproteins as effectively as will diets containing an adequate percentage of polyunsaturated fatty acids. Weight-reduction regimens are basically low in fat, and if a lowered cholesterol level is necessary, planning must be done to maintain the proper ratio of saturated to unsaturated fats."

* * *

Herbert Pollack, M.D.
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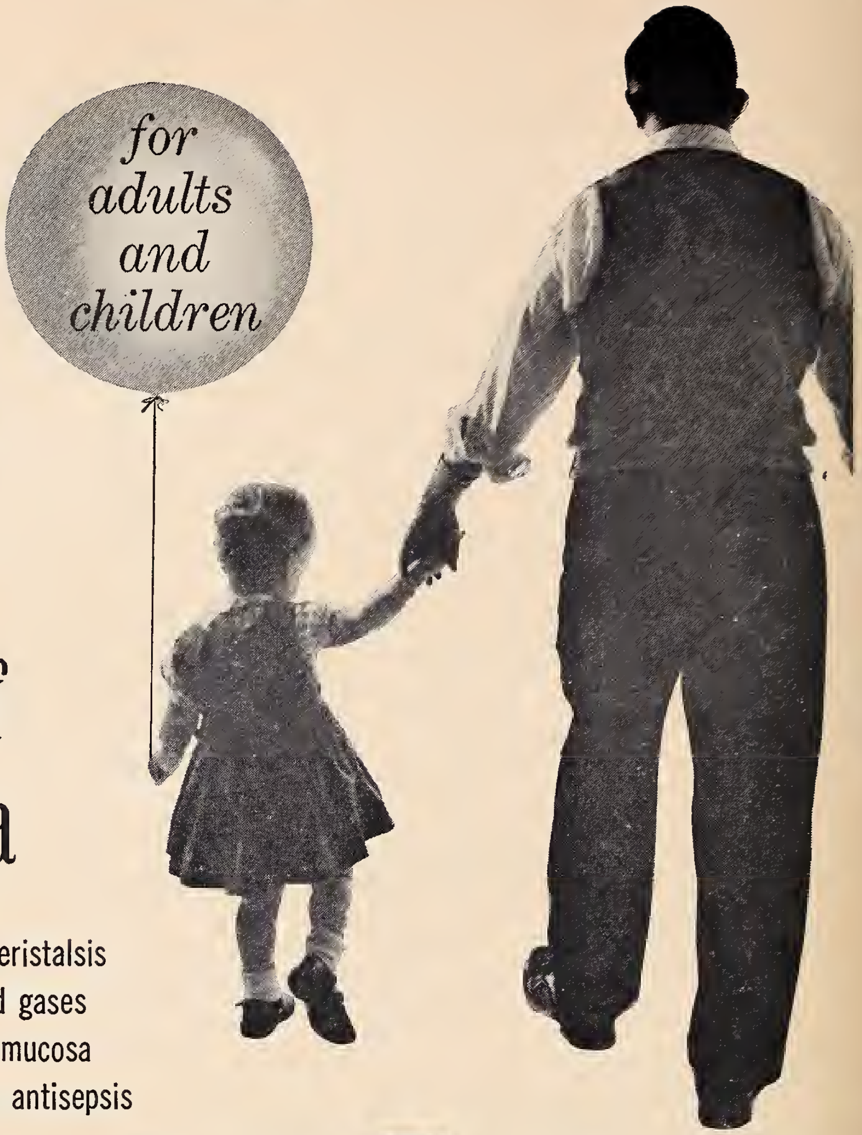

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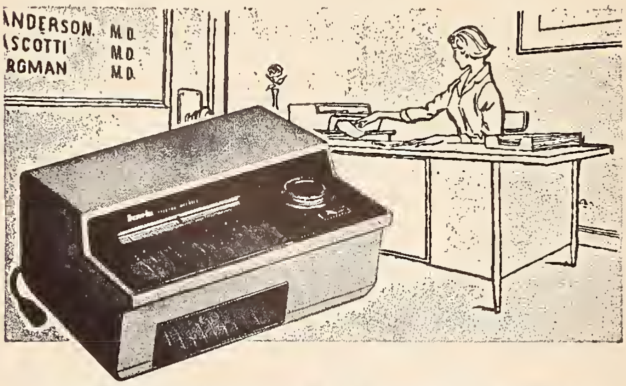
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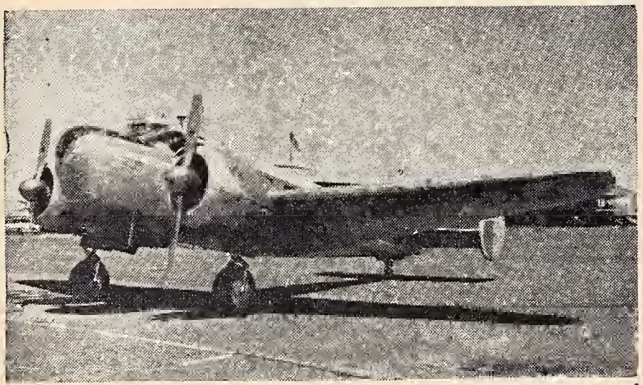

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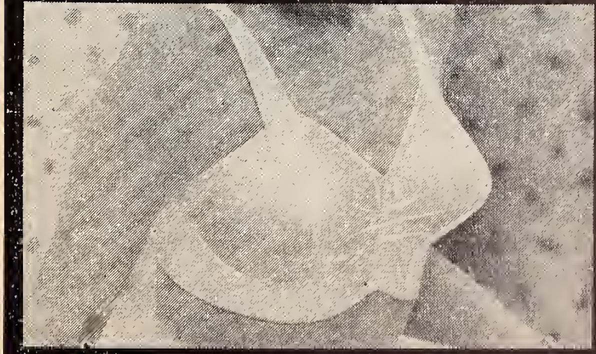

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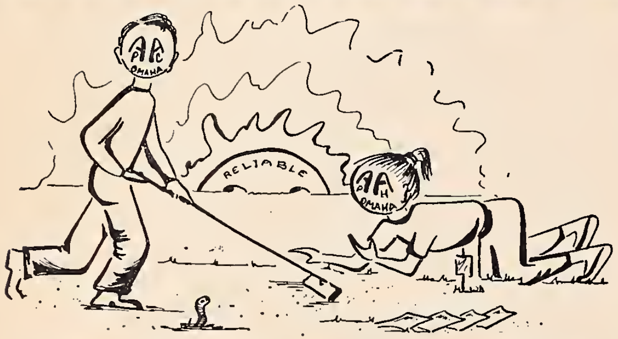

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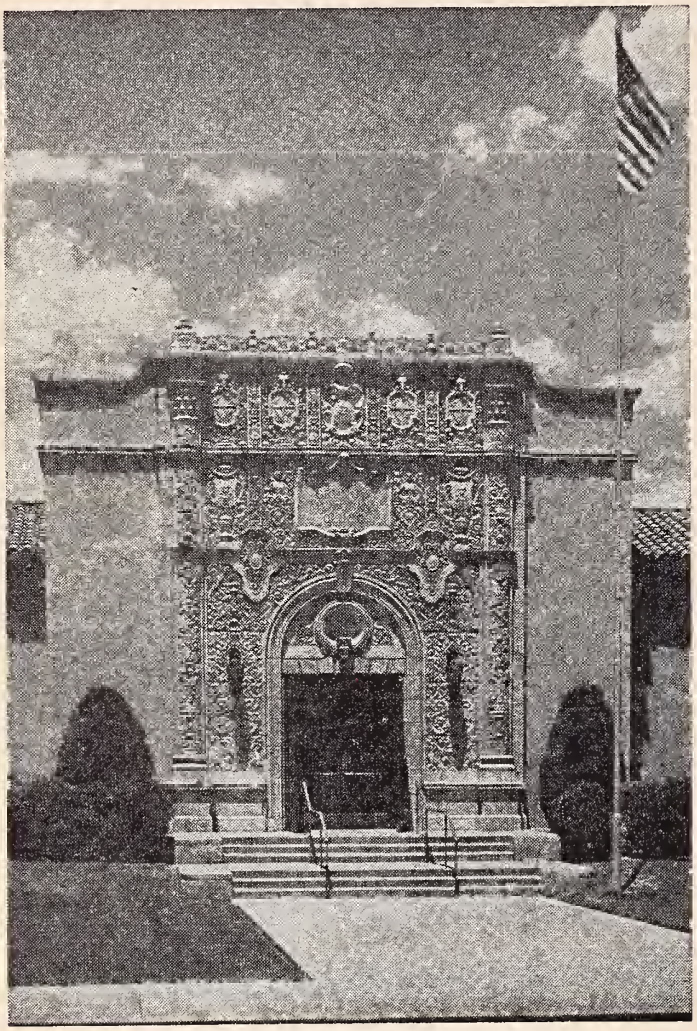

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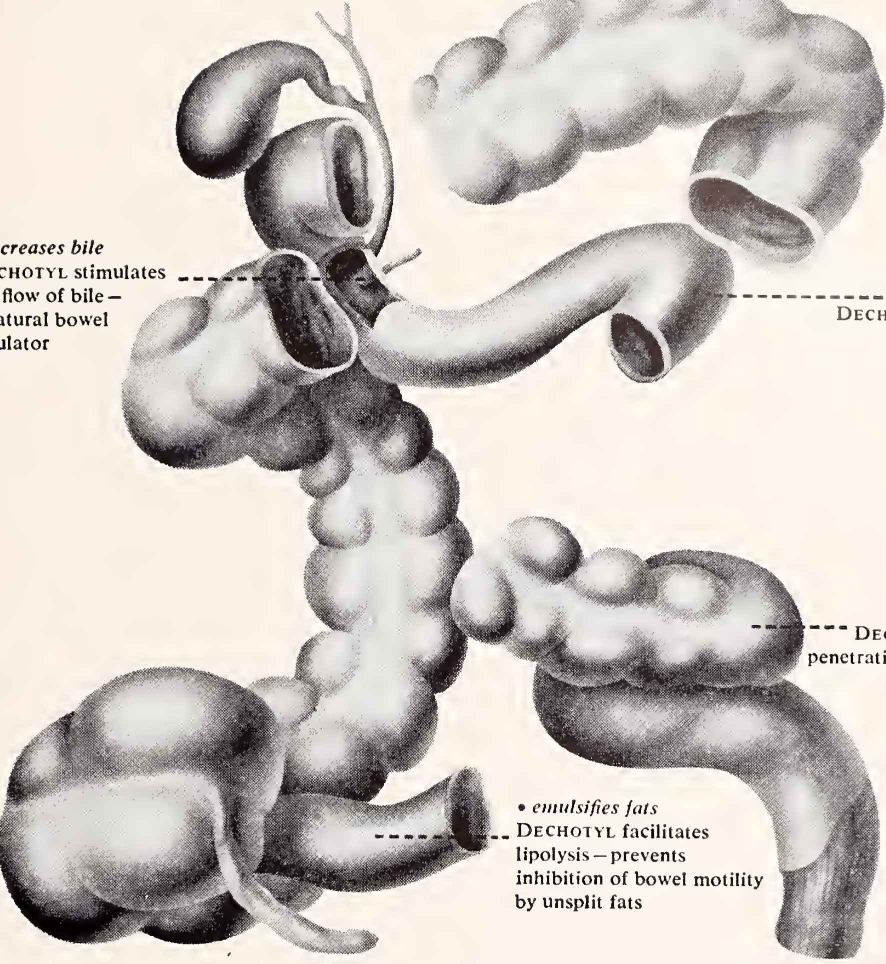

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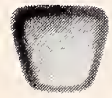

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